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Summary

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(57) [Abstract]
[Technical problem] An assembly is easy and the bill transport device which bill plugging does not generate is offered cheaply.
[Means for Solution] While making the conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the bill fed into the bill injection machine join the above-mentioned conveyance path section It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source. a unification conveyance mechanical component While showing the bill sent in from the conveyance path section of an upstream to the conveyance path section of a downstream It has a member 120,130. the acceptance guide guided so that the bill sent in from a bill injection machine side may be made to join the conveyance path section from the side -- the above-mentioned unification conveyance mechanical component -- the top frame Fu and a bottom acceptance guide -- with the bottom block BU which really cast Members 120u and 130u by synthetic resin the bottom frame Fl and a bottom acceptance guide -- division composition of the members 120l. and 130l. was carried out at the bottom block BL really cast by synthetic resin

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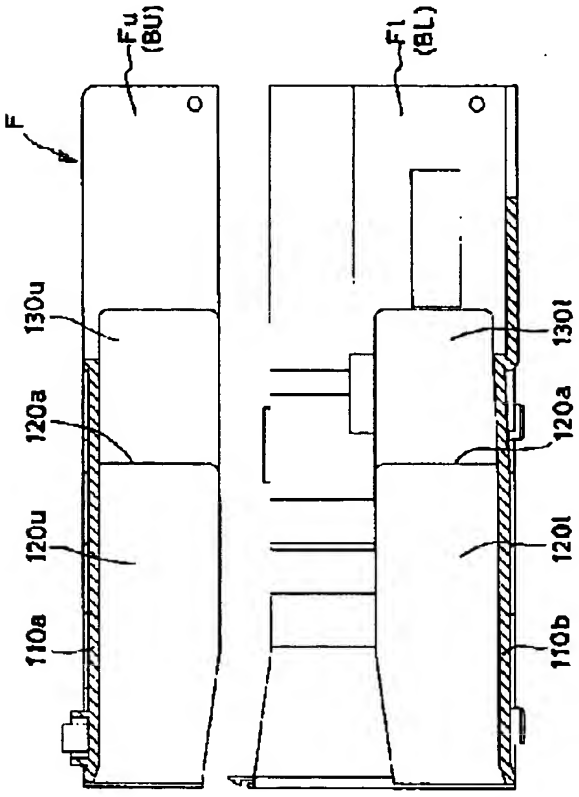

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CLAIMS

[Claim(s)]

[Claim 1] The conveyance path section conveyed from an upstream to a downstream where a bill is pinched The unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection

machine join the above-mentioned conveyance path section While have the acceptance guide member which is the bill transport device equipped with the above, and is guided so that the bill sent in from a bill injection machine side may be made to join the conveyance path section from the side, while a unification conveyance mechanical component shows the bill sent in from the conveyance path section of an upstream to the conveyance path section of a downstream and carrying out the above-mentioned unification conveyance mechanical component as block construction, it carries out having accepted with the frame of the unification conveyance mechanical component concerned, and having really cast a guide member

[Claim 2] The bill transport device according to claim 1 which divided the bottom block which really cast the top frame and the bottom acceptance guide member for the unification conveyance mechanical component, and a bottom frame and a bottom acceptance guide member into the really cast bottom block.

[Claim 3] The conveyance path section conveyed from an upstream to a downstream where a bill is pinched The unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section the [the 1st base case which is the bill transport device equipped with the above, and cast the conveyance path section by synthetic resin, and] -- it constitutes from 2 base cases, and in the 1st base case, a pulley rail and a conveyance rail are prepared in one, and it is characterized by preparing a roller rail and a conveyance rail in one at the 2nd base case

[Claim 4] The conveyance path section conveyed from an upstream to a downstream where a bill is pinched The unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section It is the bill transport device equipped with the above. between a unification conveyance mechanical component and a bill injection machine The bill repeating installation which sends into the entrance of the unification conveyance section the bill sent out from the bill injection machine is made to intervene. the above-mentioned bill repeating installation It has a case-cum-the spacer which can contain the delivery mechanism and the delivery mechanism concerned of a bill. the above-mentioned delivery mechanism The axis of rotation prepared in the vertical direction of a base object free [rotation], and the rotation pulley formed in the middle of this axis of rotation, It has the pressure-welding roller energized so that a pressure welding might be carried out to this rotation pulley. the above-mentioned base object While having the connection in which the fitting connection with the connection section prepared in the end at the frame of the unification conveyance section is possible It is characterized by having the connection section of the above-mentioned frame, and the isomorphism-like connection section in the other end, constituting so that the base object concerned or a case-cum-a spacer can be connected with **,

connecting the above-mentioned rotation pulley to the driving shaft of a unification conveyance mechanical component by the driving belt, and carrying out a rotation drive.

[Claim 5] The bill transport device according to claim 4 it was made to correspond to different **** by combining two or more bill repeating installation.

[Claim 6] The bill transport device according to claim 4 or 5 which established the mounting hole of the sensor for bill detection in the position corresponding to **** of bill repeating installation.

[Claim 7] The conveyance path section conveyed from an upstream to a downstream where a bill is pinched The unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section It is the bill transport device equipped with the above, and is characterized by making easy attachment and detachment of the conveyance belt over which separates a drive roller and a conveyance belt from a unification transport device, and the above-mentioned pulley is built at the base case which constitutes the conveyance path section while forming the pulley of the cantilever structure in which the cut side was formed in the upper surface.

[Claim 8] The bill transport device according to claim 7 which constituted the conveyance path section from a 1st base case of a fixed side, and a 2nd base case which can be opened, prepared it in the 2nd base case by the side of opening of the above-mentioned pulley, and enabled exchange of a conveyance belt the whole 2nd base case.

[Claim 9] The bill transport device which fixed the motor with the motor fixed means of a protrusion state while making the motor supporter stop the piece of attachment which established the motor supporter which carries out opening, and the motor fixed means constituted possible [frequent appearance] in the direction of the side, and was installed in the wiring box in which it is the bill transport device which is characterized by providing the following, and which is installed in a game store, and the motor of a driving source is attached at the motor The conveyance path section conveyed from an upstream to a downstream where a bill is pinched The unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section

[Claim 10] The bill transport device according to claim 9 which used the synchronous motor for the motor of a driving source.

[Claim 11] The bill transport device according to claim 9 or 10 which prepares a salient so that a crevice may be generated between the motor clamp face of a wiring box, and the motor tie-down plate of a motor, and was made to radiate heat about the motor.

[Claim 12] A bill transport device given in the claim 9 or any of 11 they are. [which made the motor supporter the taper / with a large opening edge / section with the

narrow back]

[Claim 13] The bill transport device characterized by to prepare the bill guide of the shape of a slot which is the bill transport device installed in the game store equipped with the conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section, and guides near the soffit of a bill to the conveyance path section.

[Claim 14] The bill transport device which is a bill transport device installed in the game store equipped with the conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section, and is characterized by preparing the exhaust port to which a pellet etc. can fall in a part for the point of a conveyance path.

[Claim 15] The conveyance path section conveyed from an upstream to a downstream where a bill is pinched The unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section It is the bill transport device equipped with the above, and while preparing a cavity in the side peripheral surface of the pressure-welding roller formed in the conveyance path section, it is characterized by pinching the bill which builds the pressure-welding roller concerned over an endless flat belt, builds the pulley corresponding to the above-mentioned pressure-welding roller over an endless round belt, is made to carry out the pressure welding of the above-mentioned endless flat belt and the endless round belt, and is conveyed.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the bill transport device which constitutes the conveyance path of a bill in detail, and connects two or more bill conveyance units which formed a part of conveyance path of a bill possible [opening and closing], and constitutes them about the bill transport device for conveying the bill fed into the bill injection machine which established game bases, such as a pachinko base, in the arranged tooth-back side at the ball rental machine between bases, the money-changing machine, etc. (recovery).
[0002]
[Description of the Prior Art] The bill used in a pachinko game store etc. and the ball rental machine between bases of coin combination (it is hereafter described as a ball rental machine) are known as a well-known thing. It is in it and the ball rental machine with which a 1000 yen bill can use the bill of 5000 yen and 10,000 yen from the first has also appeared in recent years. The role which the bill transport device which collects these bills certainly in such a background plays is large.
[0003] Conventionally, as this kind of a bill transport device, it consists of a base case which carries out opening to one side of the pinching direction of a bill, and an opening-and-closing case which can be opened and closed and which closes opening of this base case, the endless round belt for conveyance is attached in the aforementioned base case, and two or more rollers which pinch a bill by collaboration with the above-mentioned endless round belt, and are conveyed are attached in the aforementioned opening-and-closing case.
[0004] The unification conveyance mechanical component for making the bill fed into the ball rental machine join from the side is prepared in the bill conveyance way formed along the game base installed successively on the other hand. This unification conveyance mechanical component is constituted by ****(ing) the guide member for making the bill conveyed from the upstream in a bill conveyance way on a lower stream of a river, and the bill fed into the bill injection machine join in an enclosed-type frame.
[0005] On the other hand, when bill plugging occurs on a bill conveyance way etc., and a salesclerk does opening operation of the opening-and-closing case of the aforementioned bill transport device to a base case, the pinching state of a bill is canceled and it has the structure where removal of the bill got blocked in the bill conveyance way etc. can be performed quickly. Since [, such as a bill which curled, for example, and a bent bill] the bill of various peculiarities is variously fed into a ball rental machine, this is a sake in consideration of the workability at the time of the bill plugging.
[0006]
[Problem(s) to be Solved by the Invention] The conventional bill transport device assembles the parts of a large number by which sheet metal work was generally carried out, forms each function part, and constitutes the whole equipment

combining these function parts. For this reason, there was a possibility great trouble not only starts an assembly, but that a bill would not flow smoothly and bill plugging might occur by this deviation if out of order even when assembly positions are few. Moreover, there were many part mark, assembly costs, such as part cost and a labor cost, increased, and it had become a high product after all.

[0007] this invention was proposed in view of the above, and assembly and maintenance are easy for it and it aims at offering cheaply the bill transport device which bill plugging does not generate.

[0008]

[Means for Solving the Problem] Invention indicated to the claim 1 in order to attain the above-mentioned purpose The conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the bill fed into the bill injection machine It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the above-mentioned conveyance path section join. a unification conveyance mechanical component While showing the bill sent in from the conveyance path section of an upstream to the conveyance path section of a downstream While having the acceptance guide member guided so that the bill sent in from a bill injection machine side may be made to join the conveyance path section from the side and making the above-mentioned unification conveyance mechanical component into block construction It is the bill transport device characterized by having accepted with the frame of the unification conveyance mechanical component concerned, and really casting a guide member by synthetic resin. Invention indicated to the claim 2 is the bill transport device which divided the bottom block which really cast the top frame and the bottom acceptance guide member for the unification conveyance mechanical component, and a bottom frame and a bottom acceptance guide member into the really cast bottom block in addition to the composition of a claim 1.

[0009] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 3 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. the [the 1st base case which cast the conveyance path section by synthetic resin, and] -- it is the bill transport device characterized by having constituted from 2 base cases, having prepared the pulley rail and the conveyance rail in the 1st base case at one, and preparing a roller rail and a conveyance rail in the 2nd base case at one

[0010] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 4 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. between a

unification conveyance mechanical component and a bill injection machine The bill repeating installation which sends into the entrance of the unification conveyance section the bill sent out from the bill injection machine is made to intervene. the above-mentioned bill repeating installation It has a case-cum-the spacer which can contain the delivery mechanism and the delivery mechanism concerned of a bill. the above-mentioned delivery mechanism The axis of rotation prepared in the vertical direction of a base object free [rotation], and the rotation pulley formed in the middle of this axis of rotation, It has the pressure-welding roller energized so that a pressure welding might be carried out to this rotation pulley. the above-mentioned base object While having the connection in which the fitting connection with the connection section prepared in the end at the frame of the unification conveyance section is possible It is the bill transport device characterized by having the connection section of the above-mentioned frame, and the isomorphism-like connection section in the other end, constituting so that the base object concerned or a case-cum-a spacer can be connected with **, connecting the above-mentioned rotation pulley to the driving shaft of a unification conveyance mechanical component by the driving belt, and carrying out a rotation drive. Invention indicated to the claim 5 is combining two or more bill repeating installation in addition to the composition of a claim 4, and is the bill transport device it was made to correspond to different ****. Invention indicated to the claim 6 is the bill transport device which established the mounting hole of the sensor for bill detection in the position corresponding to **** of bill repeating installation in addition to the composition of claims 4 or 5.

[0011] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 7 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. It is the bill transport device characterized by making easy attachment and detachment of the conveyance belt over which separates a drive roller and a conveyance belt from a unification transport device, and the above-mentioned pulley is built at the base case which constitutes the conveyance path section while forming the pulley of the cantilever structure in which the cut side was formed in the upper surface. Invention indicated to the claim 8 is the bill transport device which in addition to the composition of a claim 7 constituted the conveyance path section from a 1st base case of a fixed side, and a 2nd base case which can be opened, prepared it in the 2nd base case by the side of opening of the above-mentioned pulley, and enabled exchange of a conveyance belt the whole 2nd base case.

[0012] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 9 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the

bill injection machine join the above-mentioned conveyance path section. While making a motor supporter stop the piece of attachment which established the motor supporter which carries out opening, and the motor fixed means constituted possible [frequent appearance] in the direction of the side, and was installed in the wiring box furnished with the motor of a driving source at the motor It is the bill transport device which fixed the motor with the motor fixed means of a protrusion state. Invention indicated to the claim 10 is the bill transport device which used the synchronous motor for the motor of a driving source in addition to the composition of a claim 9. Invention indicated to the claim 11 is the bill transport device which in addition to the composition of claims 9 or 10 prepares a salient so that a crevice may be generated between the motor clamp face of a wiring box, and the motor tie-down plate of a motor, and was made to radiate heat about the motor. Invention indicated to the claim 12 is the bill transport device which made the motor supporter the taper [with a large opening edge] section with the narrow back in addition to a claim 9 or the composition of 11.

[0013] Invention which indicated to a claim 13 is the bill transport device installed in the game store equipped with the conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section, and is the bill transport device carry out having prepared the bill guide of the shape of a slot which guides near the soffit of a bill to the conveyance path section as the feature.

[0014] Invention which indicated to a claim 14 is the bill transport device which is a bill transport device installed in the game store equipped with the conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section, and carries out [having prepared the exhaust port to which a pellet etc. can fall in a part for the point of a conveyance path, and] as the feature.

[0015] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 15 has pinched the bill, While preparing a cavity in the side peripheral surface of the pressure-welding roller which is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section, and is formed in the conveyance path section It is the bill transport device characterized by pinching the bill which builds the pressure-welding roller concerned over an endless flat belt, builds the pulley corresponding to the above-mentioned pressure-welding roller over an endless round belt, is made to carry out the pressure welding of the above-mentioned endless flat belt and the endless round belt, and is conveyed.

[0016]
[Embodiments of the Invention] Hereafter, the operation gestalt of this invention is explained based on a drawing. drawing 1 shows 1 operation gestalt of the **** type (every two game bases -- between bases -- or the ball rental machine is arranged above the base) bill transport device (bill conveyance unit) 10 drawing 2 shows 1 operation gestalt of the bill transport device (bill conveyance unit) 10 base type [all] (every one game base -- between bases -- or the ball rental machine is arranged above the base) In addition, in the following explanation, when the bill transport device 10 is called, the bill conveyance unit for connecting more than one and constituting the whole bill transport device shall be shown.
[0017] The bill transport device 10 of these operation gestalten consists of a unification conveyance mechanical component 100 and the conveyance path section 200. the conveyance path section 200 -- from the base case 210 and the opening-and-closing case 220 -- changing -- the nose of cam -- joint -- the member 300 is attached And the whole bill transport device which connects two or more above-mentioned bill transport devices 10, and is arranged in the island of a game store is constituted. In addition, the opening-and-closing case 220 is attached through locking equipment 5, it is constituted so that it cannot open and close recklessly, and it is raising security.
[0018] each bill transport device 10 is arranged so that the unification conveyance mechanical component 100 may usually become the position in which the bill S2 fed into the ball rental machine Q of both sides is acceptable to the space by the side of the tooth back of the game base P of two trains arranged back to back horizontally -- having -- joint -- it connects with the next bill transport device 10 through a member 300 And more than one are connected so that it may become the length corresponding to the length of the island of a game store.
[0019] As shown in drawing 4 , the unification conveyance mechanical component 100 incorporates the bill S1 sent out from the bill transport device 10 of an upstream, and the bill S2 fed into the ball rental machine Q, and sends it out to the conveyance path section 200. the upstream marginal part around the lengthwise slot 112 where this unification conveyance mechanical component 100 established the bill possible [passage] on the side attachment wall 111 to which the frame F which carried out division formation counters the shape of a hollow rectangle -- the 1st acceptance guide -- a member 120 -- forming -- the downstream marginal part of a slot 112 -- the 2nd acceptance guide -- a member 130 is formed these acceptance guides -- a member 120,130 is formed in the above-mentioned frame F and one by synthetic resin
[0020] for example, it is shown in drawing 17 and drawing 18 -- as -- the 1st acceptance guide -- a member 120 With 1st path formation Itabe 121 for forming the 1st path A which receives and guides the bill S1 from the bill transport device 10 of an upstream In order to form the 2nd path B which was formed successively in this 1st path formation Itabe's 121 pars intermedia and which receives and guides

the bill S2 from the ball rental machine Q of the side, It has 2nd path formation Itabe 122 who curved, and this 2nd path formation Itabe's 122 end face is forming successively at the marginal part of a slot 112.

[0021] the 1st acceptance guide — the member 120 inclines so that 1st path formation Itabe's 121 upstream edge may open slightly toward an upstream, and they are formed successively at the marginal part of the bill entrance 113 of Frame F where this edge constitutes the unification conveyance mechanical component 100

[0022] Thus, since it will show around in the direction right as it is even if the nose of cam where the bill S1 curled hits if it is made the taper configuration which opens small 1st path formation Itabe's 121 upstream edge, it is lost that bill plugging occurs in the bill entrance 113 neighborhood.

[0023] and the frame F — setting — the 1st acceptance guide — the 1st path A which receives and guides the bill S1 from the bill transport device 10 of an upstream by 1st path formation Itabe 121 of a member 120 is formed It comes to form successively path formation Itabe 132 who curved corresponding to 2nd path formation Itabe 122 of a member 120 on Frame F. on the other hand — the 2nd acceptance guide — a member 130 — the 1st acceptance guide — the acceptance guide of the above 1st — 2nd path formation Itabe 122 of a member 120, and the 2nd acceptance guide — the 2nd path B which receives and guides the bill S2 from a ball rental machine Q by path formation Itabe 132 of a member 130 is formed

[0024] and it is shown in drawing 17 and drawing 18 — as — the 2nd acceptance guide — path formation Itabe 132 of a member 130 is prolonged for a long time to a downstream, and the protrusion of him is attained into the conveyance path section 200 to it moreover, the 1st acceptance guide — downstream point 120a of a member 120 — the 2nd acceptance guide — the installation section by which the downstream of a member 130 is deep and until installation was carried out is constituted

[0025] Thus, a possibility of downstream point 120a being installed deep, and interfering in the bill S1 by which it came to the bill S2 which is standing by in the state where it advanced until it reached at path formation Itabe's 132 nose of cam from the ball rental machine Q in the 2nd path B, since it was very narrow from the 1st path A, and producing bill plugging disappears. Moreover, in order to progress the 1st narrow path A, even if Siwa etc. is in a bill S1, it can go on straightly as it is, without producing bill plugging.

[0026] and — this invention — the acceptance guide of the above 1st — a member 120 and the 2nd acceptance guide — a member 130 is really cast by synthetic resin with Frame F, and division composition of the frame F concerned is carried out namely, — the operation gestalt shown in the drawing — the top frame Fu and a bottom acceptance guide — the bottom block BU which really cast Members 120u and 130u, and the bottom frame Fl and a bottom acceptance guide — it has divided into the bottom block BL which really cast Members 120l. and 130l.

[0027] For example, the unification conveyance drive in the bill transport device 10

concerning this invention is constituted combining the top frame Fu and the bottom frame Fl which were constituted as shown in drawing 13 or drawing 18 . this time — between the top frame Fu and the bottom frames Fl — 1st path formation Itabe's 121 horizontal direction — the notch-like opening 124 and the 2nd acceptance guide — the notch-like opening 133 is formed in the horizontal direction of path formation Itabe 132 of a member 130 And the drive rollers 160a and 160b mentioned later, the endless round belt 161, and the friction ring 162 will advance into this opening 133.
[0028] According to the unification conveyance mechanical component 100 which carried out division composition as mentioned above, while part mark decrease remarkably, part cost and assembly cost are reducible. moreover, an acceptance guide — the position of a member can offer the product of uniform quality in regularity And according to an error with a group etc., since neither a level difference nor a crevice occurs, the cause of bill plugging can be eliminated.
[0029] As shown in drawing 20 , the motor unit 140 is being fixed to the bottom wall of Frame F. The motor unit 140 consists of the wiring box 141 and motor 142 which were really cast by synthetic resin. The wiring box 141 has the positioning boss 144 grade while having the boss section which accepts the driving shaft of a motor 142, and the supporters 146a and 146b which accept horizontally the flanges 145a and 145b of the tie-down plate 145 of a motor 142, and support them on the undersurface. That is, opening of the supporters 146a and 146b formed in the couple is carried out horizontally, and when an opening edge is large, the back is narrow, it is easy to accept the flanges 145a and 145b of the motor tie-down plate 145 and it once accepts, they are caught and it has been hard coming to escape them with the operation form shown in drawing 21 . Moreover, they are made hard to form salient 147 in the inside side of Supporters 146a and 146b, and to escape from them by this salient 147, with the operation form shown in drawing 22 , as Flanges 145a and 145b are pressed. In addition, since this salient 147 can be arranged to a point or a line and serves as a flange 145, a point contact, or a line contact, the resistance at the time of attachment is cut down.
[0030] The fixed means of a motor 142 is prepared in the wiring box 141. This fixed means forms the fixed button 148 energized by the energization means, for example, a spring, possible [frequent appearance] from the base of the wiring box 141 in the position which contacts the side edge of the tie-down plate 145 of a motor 142, and it prevents rotation of the motor tie-down plate 145, and after the fixed button 148 concerned has projected from a base, it constitutes it so that rotation of the motor tie-down plate 145 may be permitted in the state where of the fixed button 148 retreated in the wiring box 141. Moreover, the above-mentioned fixed button 148 may really be cast by synthetic resin with the wiring box 141 through a notch in part, and the elasticity of synthetic resin may be used for an energization means.
[0031] Therefore, the flanges 145a and 145b of the motor tie-down plate 145 make it rotate so that it may insert in Supporters 146a and 146b, pushing in the fixed button 148 of a fixed means in the wiring box 141, while inserting the axis of rotation

of a motor 142 in the boss of the wiring box 141, in order to fix a motor 142 to the wiring box 141. If this rotation is completed and Flanges 145a and 145b stop to Supporters 146a and 146b, the fixed button 148 will project and it will stop to the side edge of a tie-down plate 145. Therefore, return rotation is prevented and the tie-down plate 145 of a motor is fixed to the wiring box 141. What is necessary is on the other hand, to rotate the motor tie-down plate 145, where the fixed button 148 is pushed in, to solve a stop with Supporters 146a and 146b, and just to draw out, when removing a motor 142.

[0032] It is good for the above motor units 140 to use a synchronous motor. Compared with the geared motor currently used for the conventional bill transport device 10, since a synchronous motor does not have gearing, it is small and cheap. And if a synchronous motor is used, since the height of the motor itself will become low, the height of the whole bill transport device 10 can be constituted low, and the installation in narrow Shimauchi becomes easy. Moreover, if it is in this invention, unlike the transfer gear which only tells rotation of a motor, it is slowing down conventionally with the gearings 17, 18, and 19 which mention later.

[0033] And according to the motor unit 140 of the above composition, exchange of a motor 142 is also very easy and it is very effective in the work in the narrow building envelope which work was completed without using tools, such as a driver, and was left behind to the tooth-back side of the game base P.

[0034] On the other hand, like other operation forms shown in drawing 23 , if a crevice is formed between the motor tie-down plate 145 and the base of the wiring box 141 and it is made for a tie-down plate 145 and a base not to stick by forming a plinth 149, heat dissipation of a motor 142 becomes good and can prevent heating of a motor 142. Moreover, you may make it form a crevice by the slot between the bases of a tie-down plate 145 and the motor tie-down plate 145.

[0035] One driving shaft 170 (refer to drawing 8) is attached free [rotation to a perpendicular direction] between bottom wall 110b of the frame F which constitutes said unification conveyance mechanical component 100, and upper wall 110a (i.e., between the bottom block BU and the bottom blocks BL). Moreover, in the lower part of a bottom wall, the gearing 17 which prepared in the soffit of a driving shaft 170, and the gearing 18 of the driving shaft of a motor 142 and the gearing 19 of a driving shaft 173 mesh, and rotation of a motor 142 is transmitted to driving shafts 170 and 173.

[0036] Moreover, between upper wall 110a of the bottom block BU, and the bottom wall of the bottom block BL, two driven shafts 171 and 172 are attached free [rotation] perpendicularly similarly, and a driven shaft 171 rotates at the same speed in the same direction as a driving shaft 170 [above upper wall 110a] with the belt 175 with which it was equipped between pulley 174a of the diameter of the same fixed to the driving shaft 170 and the driven shaft 171, and 174b. Moreover, the gearings 176 and 177 of the same number of teeth which geared mutually are being fixed to the driving shaft 170 and the driven shaft 172, and a driven shaft 172

rotates at the same speed to an opposite direction (refer to drawing 10).
[0037] a driven shaft 171 is shown in drawing 8 -- as -- the 1st acceptance guide -- a member 120 -- small -- the side-attachment-wall 111a side -- being located -- the acceptance guide of pars intermedia, i.e., the 1st, -- the pulley 150 is being fixed in the position corresponding to the horizontal opening 124 of 1st path formation Itabe 121 of a member 120 The pulley 150 had the circular sulcus in the center of the vertical direction, and the endless round belt 151 which becomes this circular sulcus from friction objects, such as rubber, is attached in the state where it projected to the method of outside, and has projected it slightly in the 1st path A. In addition, an annular ring etc. is attached in a pulley 150 if it is in the bill transport device 10 base type [all]. In addition, even if it is supported to revolve by the bearing material (not shown) with which the bearing material mounting hole 179 established on Frame F was equipped, it gets down and the aforementioned driving shaft 170 is attached to the driven shaft 171,172 besides the above, it is the same.
[0038] This is countered and the pressure-welding roller 153 which has a friction object on a periphery is attached in the roller base 152 fixed to side-attachment-wall 111b of the bottom block BL which constitutes the bottom half portion of Frame F with the shaft 154 free [rotation]. Since this shaft 154 is energized by energization meanses (not shown), such as a spring, to the pulley 150 side, to the endless round belt 151 of the pulley 150 which carries out a rotation drive at the 1st path A, the pressure welding of the pressure-welding roller 153 is carried out, and it rotates it. For this reason, the bill S1 sent out from the bill transport device 10 of an upstream is ****(ed) and incorporated at the 1st path A between the endless round belt 151 of a pulley 150, and the pressure-welding roller 153.
[0039] a driving shaft 170 -- the 2nd acceptance guide of the 2nd path B -- the position corresponding to [it is located in the method of outside more slightly than path formation Itabe 132 of a member 130, and] the opening 133 by the side of the pars intermedia 132 of the vertical direction, i.e., path formation Itabe, -- setting -- drive roller 160a -- the inside of the 2nd path B -- projection -- it is fixed in the state the bottom This drive roller 160a is equipped with the friction ring 162, and the delivery roller 164 energized by means of a spring contacts this friction ring 162. In addition, this delivery roller 164 is attached in the wearing board 127 with which the wearing presser foot stitch tongue 125 formed in the bottom block BU and the bottom block BL is equipped free [rocking], and will be in the state where it projected from the opening 124 formed between the bottom block BU and the bottom block BL (refer to drawing 19).
[0040] For this reason, with this operation form, since it is pushed against the friction ring 162 and pinching conveyance is carried out with the above-mentioned delivery roller 164, it becomes certain incorporating the bill S2 sent out from the ball rental machine Q at the 2nd path B. Therefore, conventionally, since it becomes a bill and Siwa without the waist and has become accordion-like, even if it is the bill which cannot be incorporated, with equipment, ******** can be played certainly

possible.

[0041] Moreover, with the operation form of illustration, the acceptance guide 126 made to approach to drive roller 160a which connected the termination of the 2nd conveyance path B to the driving source is formed in the unification conveyance mechanical component 100 which the 1st conveyance path A which carries out pinching conveyance of the bill S1 from the upstream, and the 2nd conveyance path B which conveys the bill S2 from a ball rental machine Q join. That is, with this operation form, the acceptance guide 126 which projects in the shape of a rib towards the peripheral face of the above-mentioned delivery roller 164 and the contact of the endless round belt 161 is formed. This acceptance guide 126 counters the drive rollers 160a or 160b, and is prepared in the couple while it is formed in said wearing board 127 in one and is located in the upper and lower sides of the delivery roller 164.

[0042] Without according to the above acceptance guides 126, the nose of cam of a bill S2 breaking, even if it obtained from the ball rental machine Q with the noses of cam of the bill S2 sent out at the 2nd conveyance path B and has curled, the bill S2 concerned can be sent, and it can guide in the direction of a contact of a roller 164 and the endless round belt 161 certainly, and can send to it, and meal 5 ** of a roller 164 can be made good. That is, the bill S2 sent in from the ball rental machine Q can be made to certainly join to the conveyance path section 200.

[0043] moreover, the above -- the same -- the 2nd driven shaft 172 -- the 2nd acceptance guide of the 2nd path B -- path formation Itabe 132 of a member 130 -- small -- the method of outside -- being located -- **** -- the same height as the 1st driven shaft 171 -- the 2nd path B -- projection -- drive roller 160b is being fixed in the state the bottom And the friction ring 162 which consists of friction objects, such as rubber, is attached in the circular sulcus of drive roller 160b, and the friction ring 162 is projected to the 2nd path B. and the friction ring 162 -- countering -- the delivery roller 164 -- a spring -- minding -- the 1st acceptance guide -- it is attached in the state where it projected from the front end side opening 124 of a member 120 For this reason, with the delivery roller 164 and the friction ring 162, by the completely same principle as the above, the bill S2 sent out from the ball rental machine Q is pinched certainly, and is incorporated.

[0044] The gear covering 180 is attached in upper wall 110a of the frame F which constitutes a unification conveyance driving gear. The stop section of the locking equipment 5 which inhibits opening of the opening-and-closing case 220 of the bill transport device 10 of an upstream projects, is prepared, and engages and releases the stop hole of this soma 52 at the upstream of this gear covering 180. Moreover, at the nose of cam of a downstream, the upper surface of the upstream edge of the opening-and-closing case 220 is pressed down, and the piece of a stop accomplished so that removal of this opening-and-closing case 220 might be regulated is formed. In addition, if it is in the **** type form bill transport device 10 shown in drawing 1 , like the above-mentioned piece of a stop, the piece of a stop

pressed down the upper surface of the opening-and-closing case 220 of the conveyance path section 200 of an upstream, and has regulated attachment and detachment of this opening-and-closing case 220.

[0045] On the side attachment wall 111 of the bottom block BL which constitutes the lower part portion of the frame F of the unification conveyance mechanical component 100, as shown in drawing 13 or drawing 18 , the installation stationary plate 115 protrudes on one, fixes the base case 210 which constitutes the conveyance path section 200 in this installation stationary plate 115, and constitutes the bill transport device 10.

[0046] The conveyance path section 200 consists of a base case 210 which consists of 1st base case 210a and 2nd base case 210b attached in this 1st base case 210a free [opening], and an opening-and-closing case 220 attached in the upper part side of this base case 210 free [attachment and detachment], as drawing 3 shows. In addition, the opening-and-closing case 220 is not drawn on drawing 3 .

[0047] As shown in drawing 3 , drawing 5 or drawing 24 , etc., the pulley rail 230 and the plinth rail 233 which were formed in the shape of a cross-section **** KO character are horizontally prepared in the inside of side-attachment-wall 211a of 1st base case 210a, and are attached in it in the state of the cantilever free [rotation of two or more pulleys 231] with the shaft 232 of the vertical direction which stood up from the plinth rail 233 between finish plate 230a and underplate 230b which constitute this pulley rail 230. And the drive roller 190 of the driving shaft 173 in the aforementioned unification conveyance mechanical component 100 and each pulley 231 of 1st base case 210a are built over the endless round belt 161.

[0048] And molding really constitutes the above 1st base case 210a of structure by synthetic resin. Therefore, it is not necessary to attach each part material separately with a screw etc. like elegance before, and drastic curtailment of the number of assemblers is possible. And since the error at the time of with a group is not produced, either, it becomes the product by which quality was stabilized. Moreover, since part mark also decrease sharply, management etc. becomes easy.

[0049] Moreover, as shown in drawing 25 , the side of a pulley 231 is made into the shape of a taper. That is, a support side is formed in a minor diameter for free one end at a major diameter. Thus, if it forms, the substitute of the endless round belt 161 will become very easy conjointly with said cantilever structure.

[0050] 2nd base case 210b attached in the above 1st base case 210a free [opening and closing] on the other hand is also really cast by the following composition by synthetic resin. That is, in the pulley rail 230 of 1st base case 210a, and the height which counters, the roller rail 260 is formed in the inside of side-attachment-wall 211b of 2nd base case 210b. With the shaft 262, free [rotation], it is energized with a spring 263 to a pulley 231 side, and each pulley 231 and each pressure-welding roller 261 which counters are attached in this roller rail 260.

[0051] The pressure welding of the pressure-welding roller 261 by the side of 2nd

base case 210b is carried out to the endless round belt 161 of each pulley 231 by the side of 1st base case 210a in this way. For this reason, from thickness, the bill sent out from the unification conveyance mechanical component 100 is pinched by the endless round belt 161 and the pressure-welding roller 261, and is conveyed smoothly.

[0052] And pulley 231a and pressure-welding roller 261a near the unification conveyance mechanical-component 100 side are arranged so that it may be sent out from a ball rental machine Q and may be located in a downstream more slightly than the nose-of-cam position of the bill S2 of a standby state. For this reason, the endless round belt 161 of pulley 231a by the side of the best style and pressure-welding roller 261a will not be covered by the bill S2 from the ball rental machine Q of a standby state. Therefore, since the bill S1 conveyed from the 1st path A is certainly pinched by the above-mentioned endless round belt 161 and pressure-welding roller 261a, bill plugging does not arise.

[0053] In addition, while setting suitably the wave type equipped with a loose curved-surface configuration while making 260d of conveyance sides of the roller rail 260 widen in the fixing-with-a-spindle position of the pressure-welding roller 261 and forming an interval, it was made to **** through rapid step 260e with this operation form in the position beyond the pressure-welding roller 261. Even if it is the bill which the nose of cam curled and turned to the pressure-welding roller 261 side, when it is not involved in the pressure-welding roller 261 and this pressure-welding roller 261 is overcome, noise stops for this reason, occurring.

[0054] Moreover, with this operation form, as shown, for example in drawing 6 , the edge of the upstream of the roller rail 260 was set to cut side 260a, and guidance side 260b following this cut side 260a was formed in end face side 260c of the roller rail 260, and **** parallel, and was connected to the 260d of said conveyance sides.

[0055] According to the accession department of the above roller rails 260, even if it is the bill with which the nose of cam curled, it is not entered and got blocked in a crevice. moreover, the joint of the adjoining bill transport device 10 -- even if the distance which overlaps the member 300 is short, since a bill can be certainly guided to the conveyance path section 200, bill plugging does not occur in order [and] to make it overlap -- joint -- since the piece 301 of projection prepared in a member 300 can be formed small, there are few amounts of projection and handling is easy

[0056] Furthermore, with this operation form, the spring 263 which energizes the above-mentioned pressure-welding roller 261 is made into what has a comparatively weak elastic force. For this reason, even if the waist is strong and Yamagata is conveyed toward the pressure-welding roller 261 like [at the time of folding a new note in two], the pressure-welding roller 261 can miss Yamagata and there is no bill plugging which occurs for this reason.

[0057] In the bill transport device 10 concerning this invention, the endless round belt 161 for a conveyance drive can also be formed in the 2nd base case 210b side which is an opening side. That is, as shown in drawing 26 or drawing 28 , while

forming the pulley rail 230 in 2nd base case 210b, a round belt 161 is stretched to each pulley 231. Moreover, while forming the coordinated gear 234 in pulley shaft 232' of an edge so that it may coordinate with the unification conveyance mechanical component 100, the interlocking gear 235 which gears on this coordinated gear 234 is formed in the unification conveyance mechanical component 100.

[0058] And when a round belt 161 cuts, it becomes possible to stop every [which is shown in drawing 28] 2nd base case 210b, and trouble made for a game person since it can restore extremely in a short time and the stop time of the bill transport device 10 will turn into an ultrashort time, if it exchanges to the minimum.

[0059] Although the pressure-welding roller 261 is energized with the spring 263 with said operation form so that the pressure-welding roller 261 may carry out a pressure welding to a pulley 231 and a bill can be pinched with a round belt 161, the bill transport device 10 concerning this invention can omit the above-mentioned spring 263.

[0060] Therefore, with the operation form shown in drawing 29 , while carrying out the cavity of the side peripheral surface of the pressure-welding roller 265 to a hard drum type a little, each pressure-welding roller 265 is built over the endless flat belt 266. Since according to such composition a flat belt 266 is pushed by the endless round belt 161, it enters into cavity 265a of the pressure-welding roller 265 a little and repulsive force arises in a flat belt 266 in this state as shown in drawing 29 , Bill S can be pinched.

[0061] Moreover, with this operation form, wall 230' of the pulley rail 230 is circularly bulged in the direction of outside so that a round belt 161 may not contact the wall of the pulley rail 230 (refer to drawing 29). Thereby, a construct substitute of the endless round belt 161 can be made easy.

[0062] According to molding, such composition can really by synthetic resin be realized very easily. And by omitting the aforementioned spring 263, drastic curtailment of part mark and drastic curtailment of the number of erectors are attained, and part cost and a labor cost can be cut down sharply. Since the variation in poor attachment of a spring 263 and the press force does not occur, conveyance of a bill is stabilized and a bill transport device without a possibility that bill plugging may occur can be offered.

[0063] the [1st base case 210a which constitutes the conveyance path section 200, or] -- the slot-like bill conveyance guide 270 can be formed in the bottom of 2 base case 210b along with a longitudinal direction The bill with which this bill conveyance guide 270 was pinched by the endless round belt 161 which it is gutter-shaped [in which the upper part carries out opening] as shown in drawing 3 , namely, it consisted of a guide wall 271 of the couple which counters, and the bottom plate section 272 which connects the soffit of both the guide wall 271, the lower side of a bill appeared on this bottom plate section 272, and the guide walls 271 and 271 of the above-mentioned couple supported near the soffit, and was

described above, and the

[0064] According to such a bill conveyance guide 270, since the soffit portion of a bill can be guided from both sides, the horizontal recess of a bill can be prevented certainly. In addition, this bill conveyance guide 270 may be formed in 2nd base case 210b by the side of opening, and can also be formed combining both the cases 210a and 210b.

[0065] near [above] the edge of the downstream of the bill conveyance guide 270 (i.e., joint) — in the bottom plate section 272 near the edge by the side of a member 300, the opening 273 for discharging a pellet, a foreign matter, etc. is established The pellet which is the granular cleaning agent used when carrying out washing polish of the pachinko ball, overflowed from the soaping machine, and adhered on the outskirts may mix a pellet in a conveyance path from the opening-and-closing case 220 opened by maintenance check. If this mixed pellet is left, since it will become the cause which causes bill plugging, you have to discharge.

[0066] then, in the bill transport device 10 concerning this invention, a pellet can be discharged efficiently — as position namely, described above, opening 273 is established as an exhaust port near the downstream edge of the bill conveyance guide 270 (refer to drawing 3) If the exhaust port is prepared in this position, it can prevent that a pellet etc. invades into the bill transport device 10 of a downstream, and bill plugging can be prevented beforehand.

[0067] The bill repeating installation 400 which sends into the entrance of the unification conveyance mechanical component 100 the bill sent out from the bill injection machine (ball rental machine Q) is made to intervene between a bill injection machine and the unification conveyance mechanical component 100. This bill repeating installation 400 is for aiming at correspondence of **** which changes with game stores, namely, even if the depth of an island differs and the distance of a bill injection machine and the unification conveyance mechanical component 100 differs, it is for sending a bill into the unification conveyance mechanical component 100 certainly.

[0068] Then, this bill repeating installation 400 is equipped with the delivery mechanism 41 in which it has the rotation pulley 410 and the pressure-welding roller 420 of a couple, and a case-cum-the spacer 42 which contains this delivery mechanism 41. The above-mentioned delivery mechanism 41 is equipped with the axis of rotation 412 prepared in the vertical direction of the base object 411 free [rotation], the rotation pulley 410 formed in this rotation middle, and the pressure-welding roller 420 energized so that a pressure welding might be carried out to this rotation pulley 410.

[0069] The above-mentioned base object 411 is the member cast by synthetic resin, and it has the connection section 430 of the above-mentioned frame F, and the isomorphism-like connection section 450 in the other end, and it constitutes them so that the base object 411 concerned can be connected one after another while it has the connection 440 in which the fitting connection with the connection section

430 prepared in the end at the frame F of the unification conveyance mechanical component 100 is possible.

[0070] On the other hand, a case-cum-the spacer 42 which can cover the above-mentioned base object 411 is fixable to the side-attachment-wall section of the unification conveyance mechanical component 100. When operating a case-cum-this spacer 42 as a case, while ****(ing) said base object 411 which sends and is equipped with a mechanism 41, the drive pulley 413 is formed on the top-plate section, and it builds over a driving belt 415 between the drive pulleys 414 of the unification conveyance mechanical component 100 (drawing 10). On the other hand, although a pulley etc. is not formed in a case when making it function as a spacer, the tension roller 416 of a driving belt 415 is formed in a top plate (drawing 30). And the bill repeating installation 400 of a desired interval is constituted, combining suitably the above delivery mechanisms 41 and a case-cum-the spacer 42.

[0071] According to the above bill repeating installation 400, it can respond to different **** by combining a single member flexibly, and curtailment of cost and stock of parts become easy. moreover, it can respond also to a sudden specification change immediately — etc. — practical value is very high In addition, that what is necessary is for the tubed spacer 45 just to perform adjustment of the distance with which the interval of a case-cum-the spacer 42 is not filled, no matter the bill injection machine and the unification conveyance mechanical component 100 may be arranged at what interval, they can guide a bill without a crevice.

[0072] furthermore, the joint which constitutes the conveyance path section 200 — in a member 300 and the base cases 210a and 210b, the mounting holes r0, r1, r2, and r3 of two or more sensors R for bill detection and — are established, it chooses suitably and the sensor R for bill detection is attached so that it may correspond to **** of the bill repeating installation 400 This is from the consideration with which it is made for the bill sent in from the upstream of the conveyance path section 200 and the bill sent in from the side by the bill injection machine not to lap in the unification conveyance mechanical component 100. That is, it is for preventing un-arranging [the number of bills counted when supplied to a bill injection machine, and whose number of bills finally brought together in the stacker do not correspond]. the narrow operation form of **** specifically shown in drawing 5 and drawing 6 — joint -- the mounting hole r0 prepared in the member 300 side was chosen, and Sensor R is formed On the other hand, as shown in drawing 33 , **** spread, with the operation form using the bill repeating installation 400, the mounting hole r1 was chosen and the sensor R of a couple is attached. Thus, the attaching position of Sensor R is moved corresponding to island broadening.

[0073] It attaches in 1st base case 210a fixed to the installation stationary plate 115 of Frame F as described above free [attachment and detachment of 2nd base case 210b]. the engagement of the 1st firm attachment metallic ornaments which attached this in the bottom wall of for example, 1st base case 210a — what is necessary is just to make the engagement salient of the 2nd firm attachment

metallic ornaments attached in the lower edge of the side attachment wall of 2nd base case 210b engage with a hole detachably according to such composition -- engagement -- the engagement salient made to engage with a hole -- the supporting point -- carrying out -- 2nd base case 210b -- this engagement -- rotation becomes free to 1st base case 210a centering on a hole, and if engagement is removed, 2nd base case 210b is separable In addition, drawing 7 shows the state where it hung down from 1st base case 210a which 2nd base case 210b is not rotating and illustrating exactly.

[0074] In drawing 1 and drawing 2 , the opening-and-closing case 220 is attached in the upper surface of both the attached base case 210 free [attachment and detachment]. that is, two or more pins (not shown) prepare in the lower edge of the opening-and-closing case 220 -- having -- **** -- the [hole 214a of the upper wall of 1st base case 210a, and] -- insertion engagement is carried out from the upper part at hole 214b (refer to drawing 3) of the upper wall of 2 base case 210b Moreover, inside the opening-and-closing case 220, the guide wall which guides the upper-limb section of a bill which has the conveyance path section 200 conveyed is prepared.

[0075] Moreover, the opening-and-closing case 220 base [1st] case 210a Reaches, and to form by transparence material is good like 2nd base case 210b. That is, if it is transparence material, even if situations, such as a normal flow of the bill in a conveyance path and bill plugging, will not open the opening-and-closing case 220 from the exterior, it can check by looking.

[0076] the downstream of the conveyance path section 200 -- joint -- it attaches free [movement of a member 300] joint -- a member 300 is equipped with the taper slot 31 which the nose of cam of the bill conveyance guide 270 enters as shown in drawing 9 , and it delivers a bill The above-mentioned taper slot 31 C, i.e., a bill path, narrows width of face gradually toward the downstream, and the above-mentioned taper slot 201 has the beak-like piece 301 of projection in the downstream further. Since the bill transport device 10 of a downstream is overlapped and a bill is held by this piece 301 of projection, the bill transport device 10 of a downstream can be made to incorporate certainly.

[0077] in addition, joint -- if it is in a **** type at the end face of the downstream of a member 300 -- the hole of the conveyance path section 200 of the bill transport device 10 of a downstream -- moreover, if it is in all base types, two or more contact pins 32 for inserting in the hole of the side attachment wall 111 of Frame F have protruded horizontally

[0078] and the bill transport device 10 concerning this invention is shown in drawing 1 and drawing 2 -- as -- joint -- the locking equipment 5 whose fixation or release operation of the opening-and-closing case 220 is attained for a member 300 is formed and the keyhole is established in locking equipment 5 and release of the opening-and-closing case 220 inhibits the key which can be freely taken out and inserted to this keyhole by carrying out insertion operation -- having -- joint --

****** bill transport-device 10 comrades are connected in this state at the same time sliding to the upstream of a member 300 is regulated

[0079] On the other hand, if the above-mentioned suppression state is canceled, removal of the opening-and-closing case 220 will be attained, and 2nd base case 210b which is a part of conveyance path section 200 will be released.

[0080] although the above-mentioned explanation is explanation in the bill transport device 10 base type [all] as [shown in drawing 2] -- a **** type -- setting -- joint -- what is necessary is just to inhibit opening of the opening-and-closing case 220 with the locking equipment 5 installed in the member 300 side by side In addition, if it is not necessary to install it, and especially locking equipment 5 is in a game store without the need and is not installed, curtailment of an installation cost is possible for it.

[0081] In addition, the composition of the bill transport device 10 of this invention is easily applicable as transport devices, such as the so-called prepaid card which made the medal or the valuable value as money including the coin, and a game medium memorize.

[0082] As mentioned above, although this invention was explained about the operation form of a drawing, this invention is not limited to said operation form, and unless the composition indicated to the claim is changed, it can be carried out suitably.

[0083]

[Effect of the Invention] As explained above, invention indicated to the claim 1 The conveyance path section conveyed from an upstream to a downstream where a bill is pinched, and the bill fed into the bill injection machine It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the above-mentioned conveyance path section join. a unification conveyance mechanical component While showing the bill sent in from the conveyance path section of an upstream to the conveyance path section of a downstream While having the acceptance guide member guided so that the bill sent in from a bill injection machine side may be made to join the conveyance path section from the side and making the above-mentioned unification conveyance mechanical component into block construction Since it accepted with the frame of the unification conveyance mechanical component concerned and the guide member was really cast by synthetic resin, while part mark decrease, an assembly can become easy and can cut down part cost, a labor cost, etc. sharply. Moreover, since an error does not arise at the time of an assembly, the product of the stable quality can be offered.

[0084] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 3 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. It

constitutes from 2 base cases. the [the 1st base case which cast the conveyance path section by synthetic resin, and] -- in the 1st base case Since the pulley rail and the conveyance rail were prepared in one and the roller rail and the conveyance rail were prepared in one at the 2nd base case, while part mark decrease, assembly work can become easy and can cut down part cost, a labor cost, etc. sharply. Moreover, since an error does not arise at the time of an assembly, the product of the stable quality can be offered.

[0085] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 4 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. between a unification conveyance mechanical component and a bill injection machine The bill repeating installation which sends into the entrance of the unification conveyance section the bill sent out from the bill injection machine is made to intervene. the above-mentioned bill repeating installation It has a case-cum-the spacer which can contain the delivery mechanism and the delivery mechanism concerned of a bill. the above-mentioned delivery mechanism The axis of rotation prepared in the vertical direction of a base object free [rotation], and the rotation pulley formed in the middle of this axis of rotation, It has the pressure-welding roller energized so that a pressure welding might be carried out to this rotation pulley. the above-mentioned base object While having the connection in which the fitting connection with the connection section prepared in the end at the frame of the unification conveyance section is possible Have the connection section of the above-mentioned frame, and the isomorphism-like connection section in the other end, and it constitutes so that the base object concerned or a case-cum-a spacer can be connected with **. Since the above-mentioned rotation pulley is connected to the driving shaft of a unification conveyance mechanical component by the driving belt and it was made to carry out a rotation drive, it can respond to different **** by combining a single member flexibly, and curtailment of cost and stock of parts become easy. moreover, it can respond also to a sudden specification change immediately -- etc. -- practical value is very high

[0086] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 7 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. In the base case which constitutes the conveyance path section, while forming the pulley of the cantilever structure in which the cut side was formed in the upper surface Since attachment and detachment of the conveyance belt over which separates a drive roller and a conveyance belt from a unification transport device, and the above-mentioned pulley is built were made easy, exchange of a belt is quickly

possible and it can stop un-arranging [of interrupting a game] to the minimum.
[0087] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 9 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. While making a motor supporter stop the piece of attachment which established the motor supporter which carries out opening, and the motor fixed means constituted possible [frequent appearance] in the direction of the side, and was installed in the wiring box furnished with the motor of a driving source at the motor Since the motor was fixed with the motor fixed means of a projection state, the exchange work of a motor becomes remarkably easy. Moreover, since a tool is not needed, also in narrow Shimauchi's space, quick work is possible.
[0088] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 13 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. Since the bill guide of the shape of a slot which guides near the soffit of a bill to the conveyance path section was prepared, a bill can be conveyed with the stable posture and bill plugging can be prevented beforehand.
[0089] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 14 has pinched the bill, It is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section. Since the exhaust port to which a pellet etc. can fall was prepared in a part for the point of a conveyance path, the pellet mixed into the bill transport device can be discharged easily, and the trouble by mixing of a pellet etc. can be prevented beforehand.
[0090] The conveyance path section conveyed from an upstream to a downstream after invention indicated to the claim 15 has pinched the bill, While preparing a cavity in the side peripheral surface of the pressure-welding roller which is the bill transport device installed in the game store equipped with the unification conveyance mechanical component which has a driving source while making the bill fed into the bill injection machine join the above-mentioned conveyance path section, and is formed in the conveyance path section Since the bill which builds the pressure-welding roller concerned over an endless flat belt, builds the pulley corresponding to the above-mentioned pressure-welding roller over an endless round belt, is made to carry out the pressure welding of the above-mentioned endless flat belt and the endless round belt, and is conveyed was pinched, a press spring becomes unnecessary. Therefore, drastic curtailment of part mark and drastic curtailment of the number of erectors are attained, and part cost and a labor cost

can be cut down sharply. Moreover, since the variation in poor attachment of a press spring and the press force does not occur, conveyance of a bill is stabilized and a bill transport device without a possibility that bill plugging may occur can be offered.

[Translation done.]

* NOTICES *

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the perspective diagram showing 1 operation form of the **** type bill transport device of this invention.
[Drawing 2] It is the perspective diagram showing 1 operation form of the bill transport device of this invention base type [all].
[Drawing 3] It is the perspective diagram showing 1 operation form in the state where the base case was opened wide.
[Drawing 4] It is outline explanatory drawing showing the specified condition of a bill transport device.
[Drawing 5] It is the front view of the open state which shows the interior of a bill transport device.
[Drawing 6] It is the plan of the open state which shows the interior of a bill transport device.
[Drawing 7] It is the front view showing the inside of the 2nd base case.
[Drawing 8] It is the plan of an important section showing a unification conveyance mechanical component.
[Drawing 9] It is a plan explaining a lower bill guide and a joint member.
[Drawing 10] It is the plan showing a unification conveyance mechanical component and bill repeating installation.
[Drawing 11] It is the front view of the bill repeating installation prepared in the unification conveyance mechanical component.
[Drawing 12] It is the side elevation of the bill repeating installation prepared in the

unification conveyance mechanical component.
[Drawing 13] It is the front view of the frame of the unification transport device which carried out division composition up and down.
[Drawing 14] It is the upstream side elevation of the frame of the unification transport device which carried out division composition up and down.
[Drawing 15] It is the downstream side elevation of the frame of the unification transport device which carried out division composition up and down.
[Drawing 16] It is drawing of longitudinal section of the frame of the unification transport device which carried out division composition up and down.
[Drawing 17] It is a bottom plan view showing the inside of a top frame.
[Drawing 18] It is a plan showing the inside of a bottom frame.
[Drawing 19] It is explanatory drawing of operation in a unification conveyance mechanical component.
[Drawing 20] It is the perspective diagram of 1 operation form of a motor unit.
[Drawing 21] It is the cross section of 1 operation form of a motor unit.
[Drawing 22] It is the cross section of other operation forms of a motor unit.
[Drawing 23] It is the perspective diagram of other operation forms of a motor unit.
[Drawing 24] It is the side elevation of 1 operation form of the conveyance path section.
[Drawing 25] It is the side elevation of other operation forms of the conveyance path section.
[Drawing 26] It is the plan showing other operation forms of the conveyance path section.
[Drawing 27] It is the front view showing the interior in other operation forms of the conveyance path section.
[Drawing 28] It is the front view showing the interior of the 2nd base case same as the above.
[Drawing 29] It is side explanatory drawing showing other operation forms of the conveyance path section.
[Drawing 30] It is flat-surface explanatory drawing of the operation form which combined bill repeating installation.
[Drawing 31] It is transverse-plane explanatory drawing of the operation form which combined bill repeating installation.
[Drawing 32] It is side explanatory drawing of the operation form which combined bill repeating installation.
[Drawing 33] It is the plan of the open state which shows the interior of the bill transport device by other operation forms.
[Description of Notations]
5 Locking Equipment
10 Bill Transport Device
41 Delivery Mechanism
42 Case-cum-Spacer

100 Unification Conveyance Mechanical Component
120 Acceptance Guide -- Member
120l. and 130l. a bottom acceptance guide -- member
120u and 130u a bottom acceptance guide -- member
121 1st Path Formation Itabe
122 2nd Path Formation Itabe
124 Opening
130 Acceptance Guide -- Member
132 Path Formation Itabe
133 Opening
140 Motor Unit
141 Wiring Box
142 Motor
145 Motor Tie-down Plate
145a, 145b Flange
146a, 146b Supporter
147 Salient
148 Fixed Button
150 Pulley
151 Endless Round Belt
152 Roller Base
153 Pressure-Welding Roller
161 Endless Round Belt
164 Delivery Roller
170 Driving Shaft
171 Driven Shaft
172 Driven Shaft
173 Driving Shaft
180 Gear Covering
190 Drive Roller
200 Conveyance Path Section
210 Base Case
210a The 1st base case
210b The 2nd base case
220 Opening-and-Closing Case
230 Pulley Rail
231 Pulley
233 Plinth Rail
234 Coordinated Gear
235 Interlocking Gear
260 Roller Rail
261 Pressure-Welding Roller

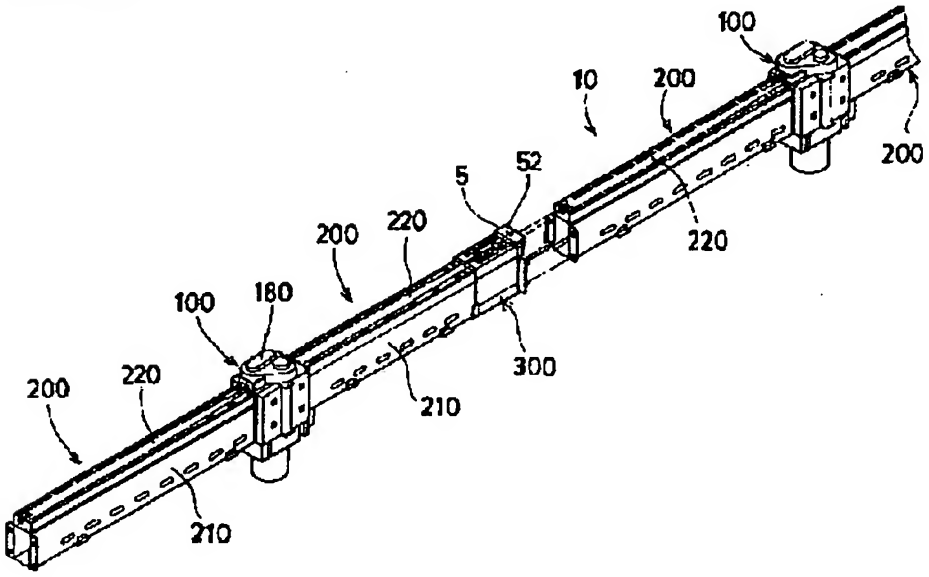
265 Pressure-Welding Roller
266 Flat Belt
270 Bill Conveyance Guide
400 Bill Repeating Installation
410 Rotation Pulley
411 Base Object
412 Axis of Rotation
413 Drive Pulley
414 Drive Pulley
415 Driving Belt
416 Tension Roller
420 Pressure-Welding Roller
430 Connection Section
440 Connection
450 Connection Section
A Conveyance path
B Conveyance path
BL Bottom block
BU Bottom block
C Bill path
F Frame
Fl Bottom frame
Fu Top frame
P Game base
Q Ball rental machine
R The sensor for bill detection
r0, r1, r2, -- sensor mounting hole
S Bill
S1 Bill
S2 Bill

[Translation done.]

* NOTICES *

DRAWINGS

[Drawing 1]



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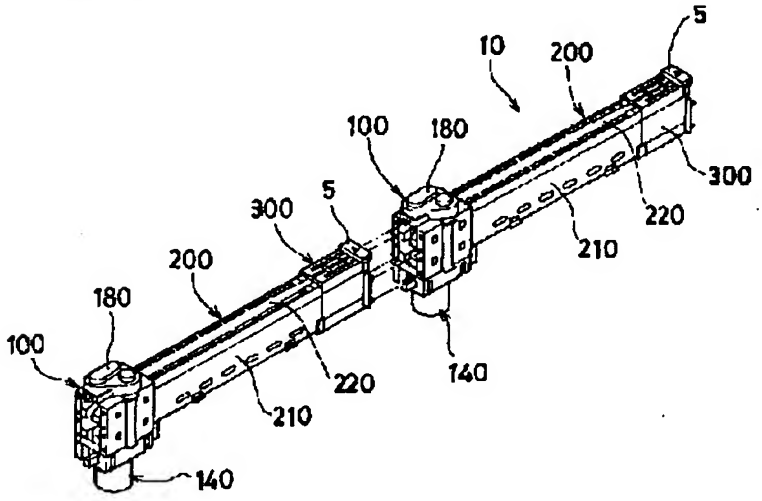

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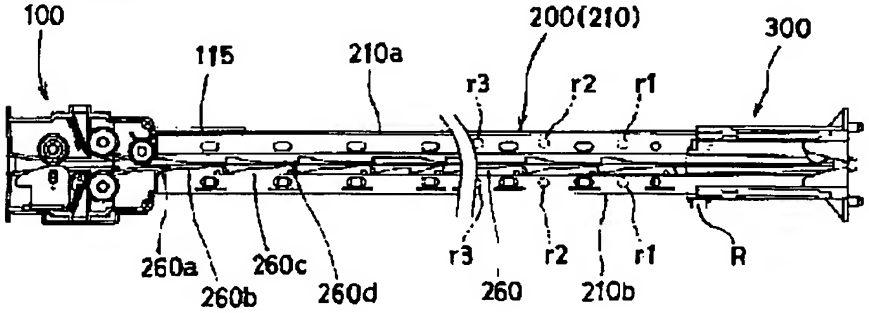

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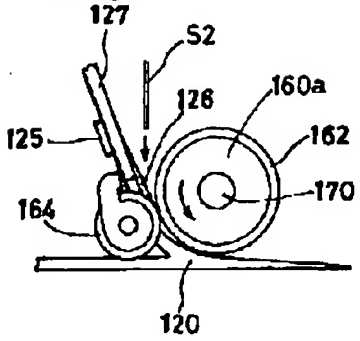

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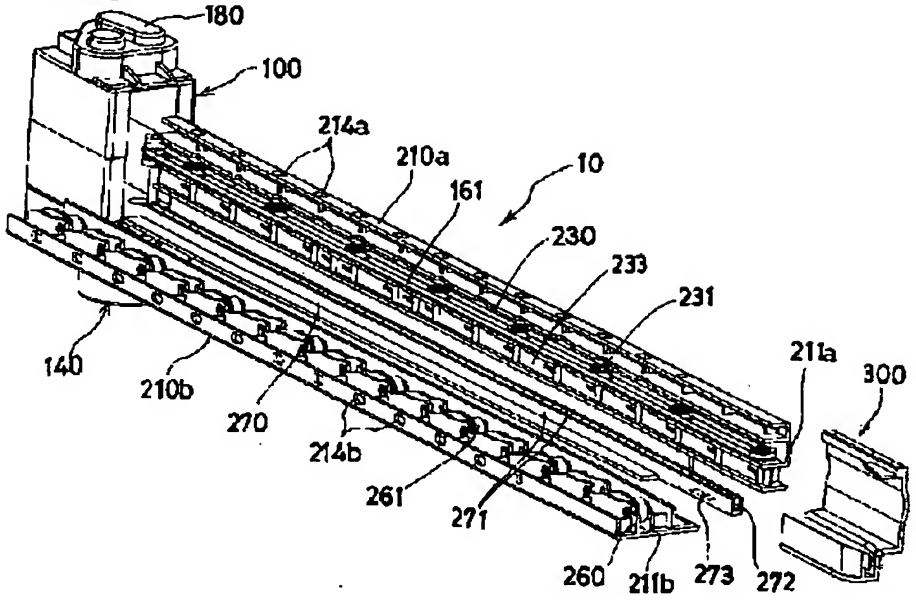

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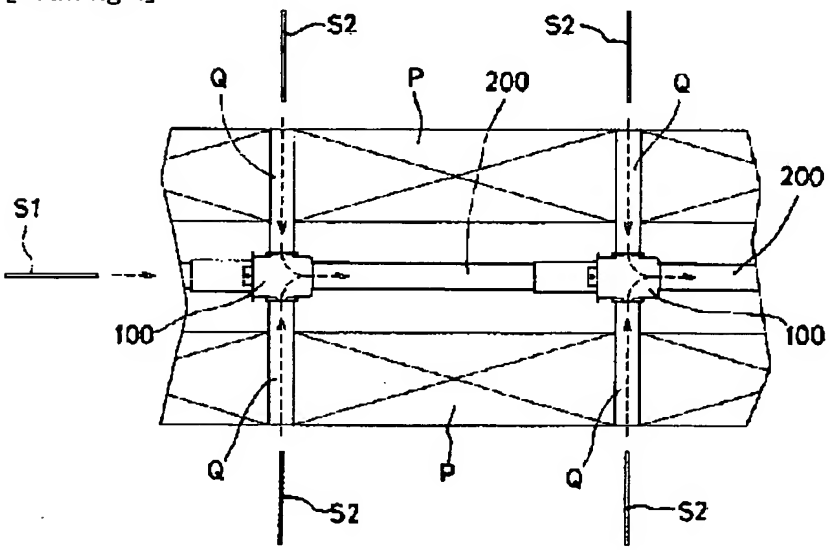

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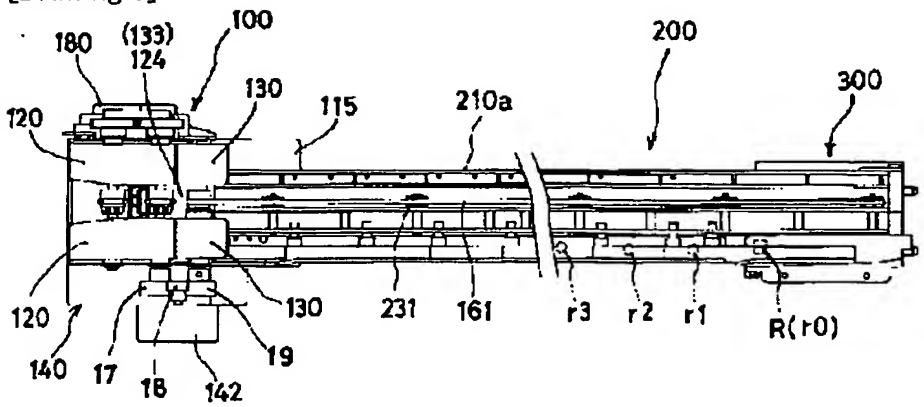

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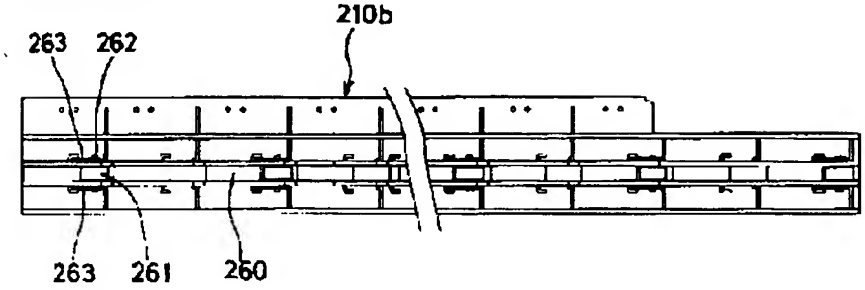

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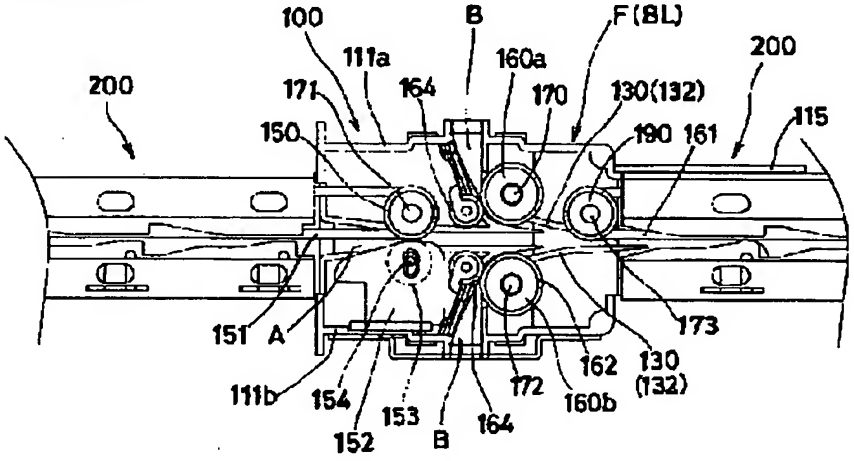

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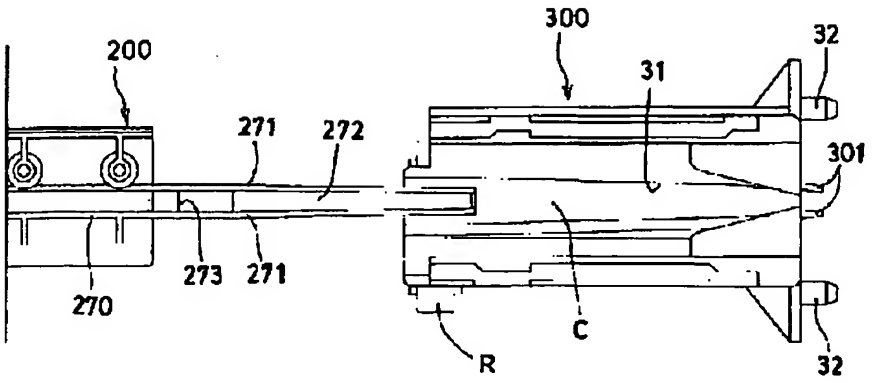

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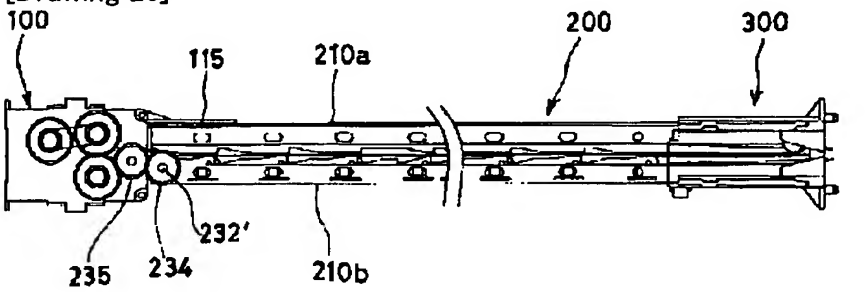

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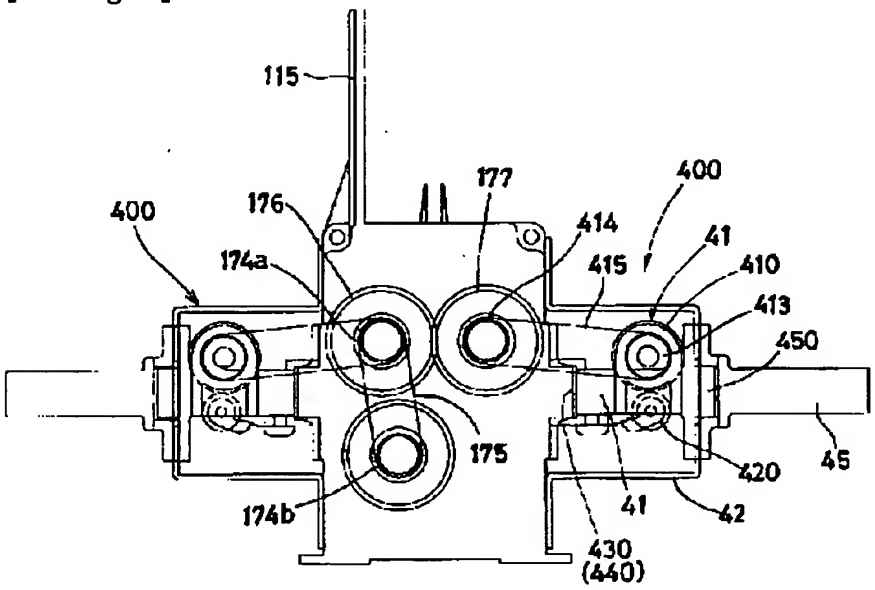

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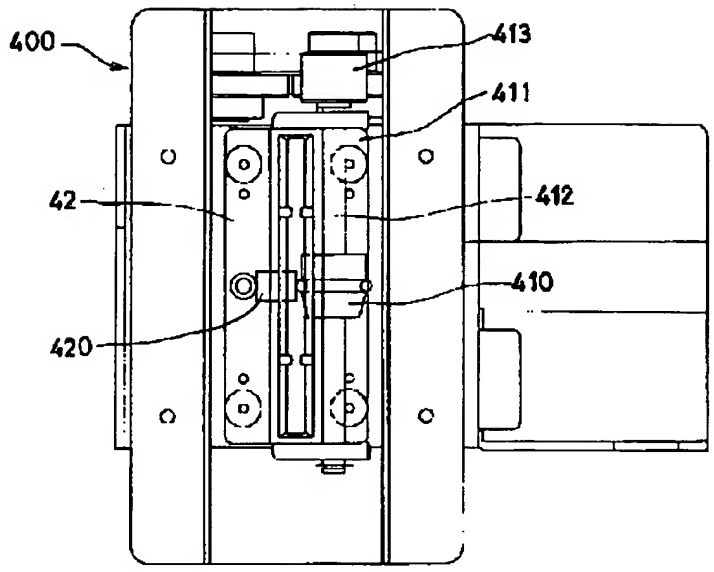

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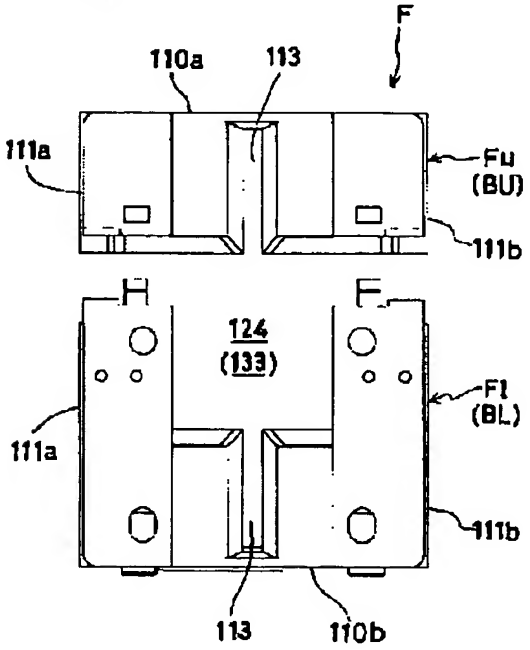

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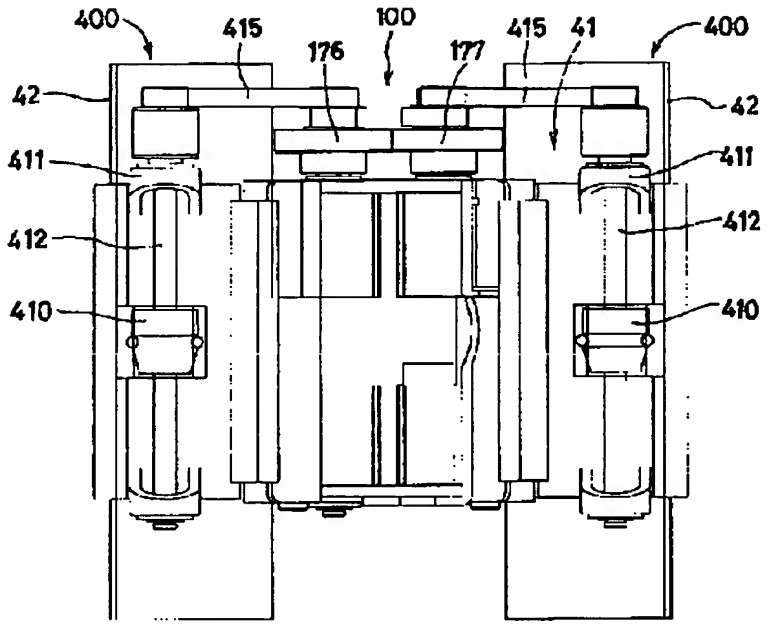

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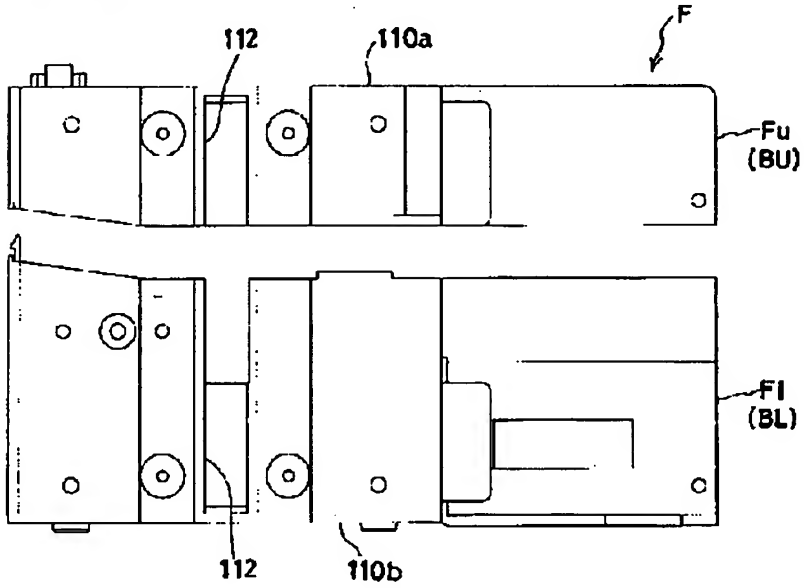

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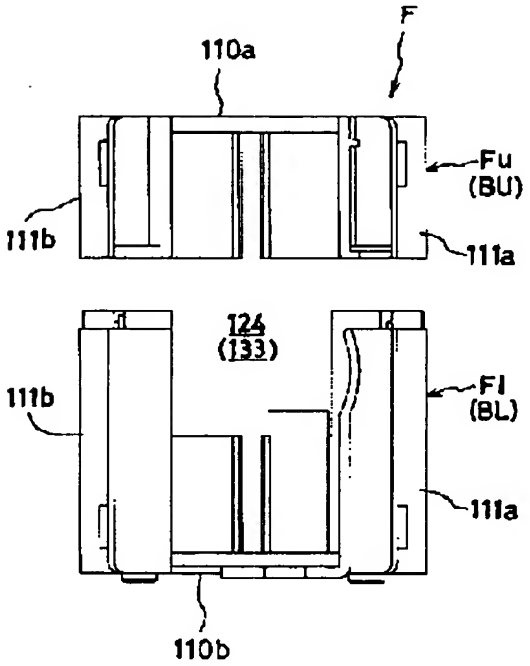

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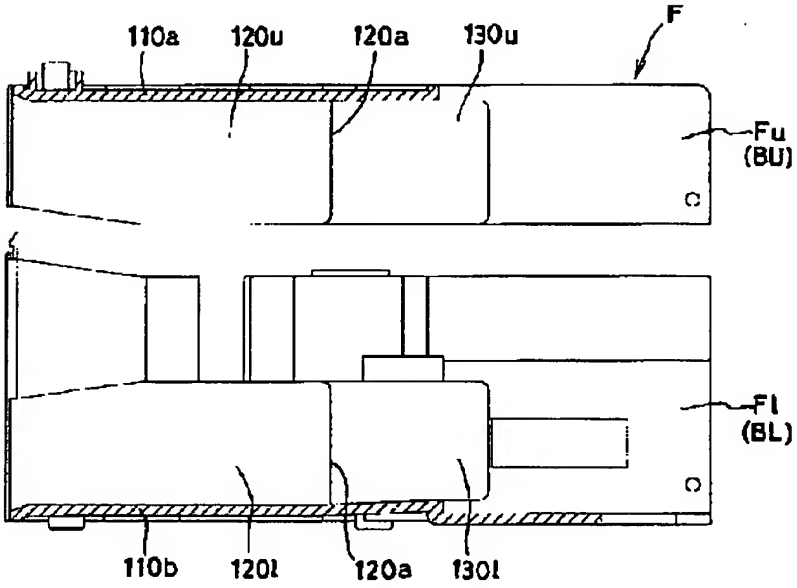

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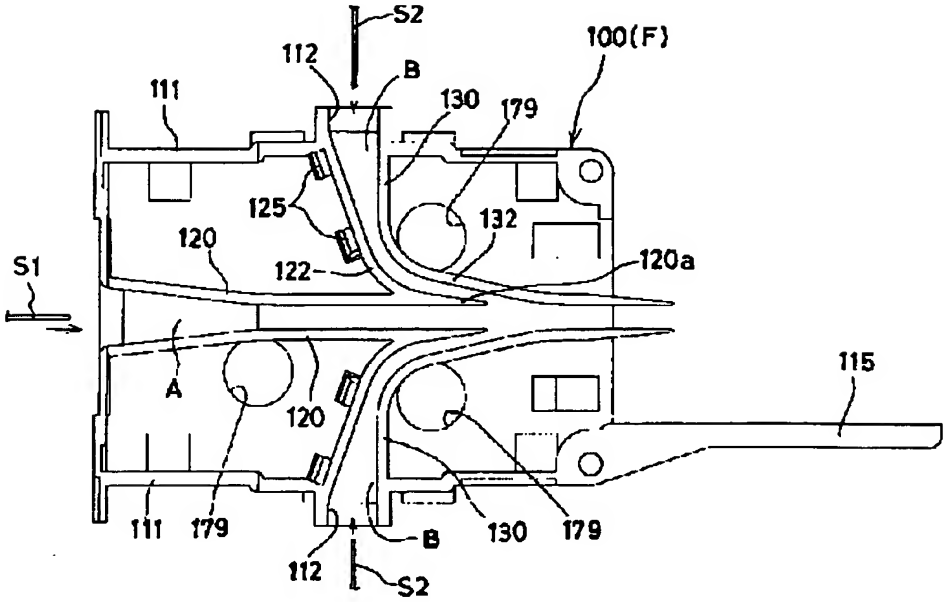

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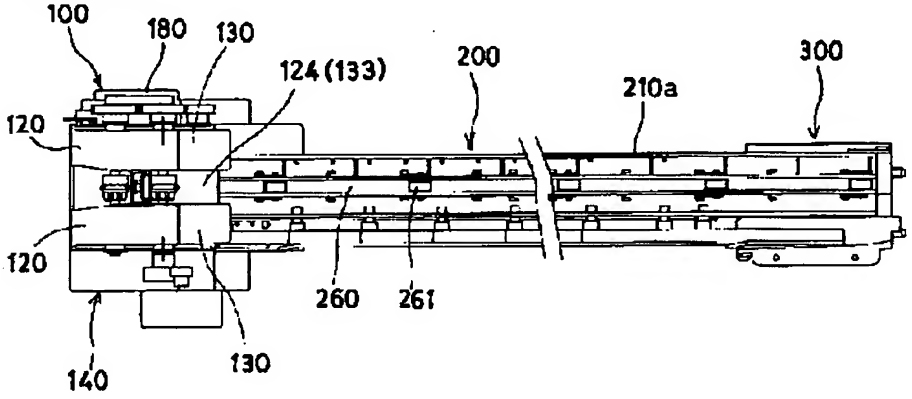

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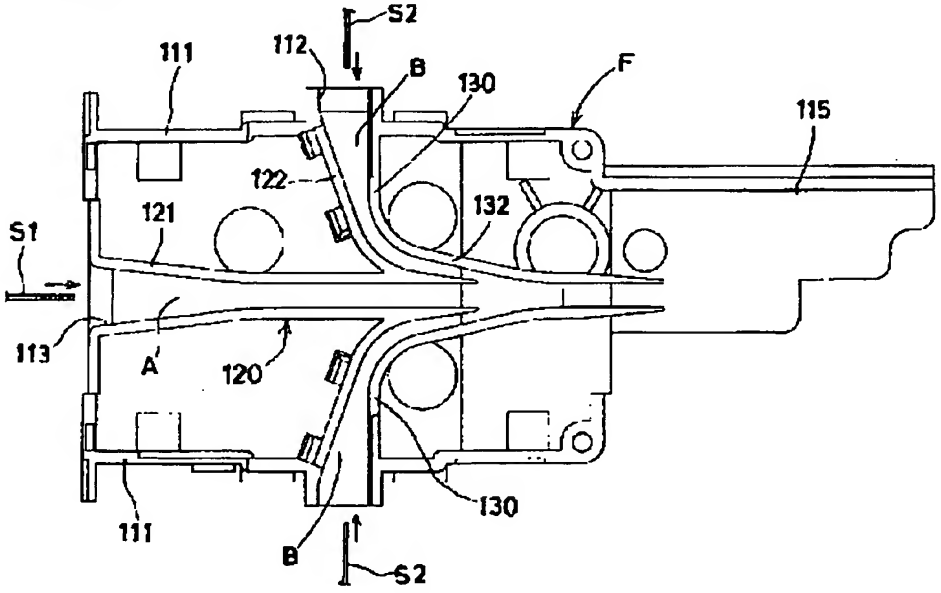

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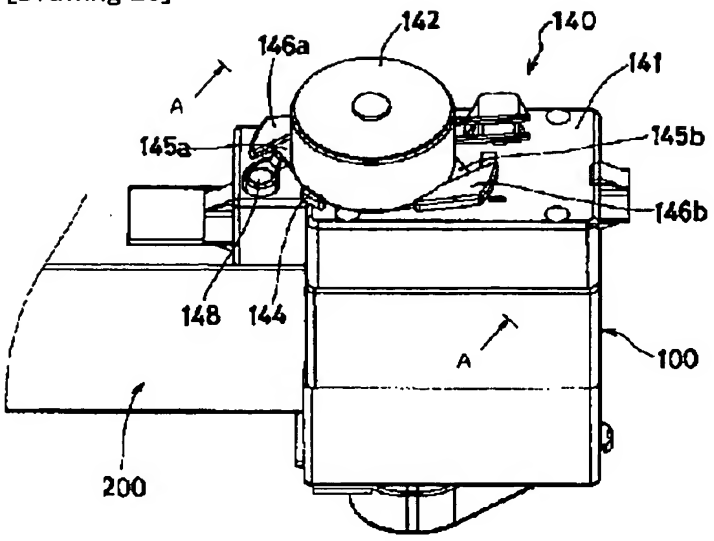

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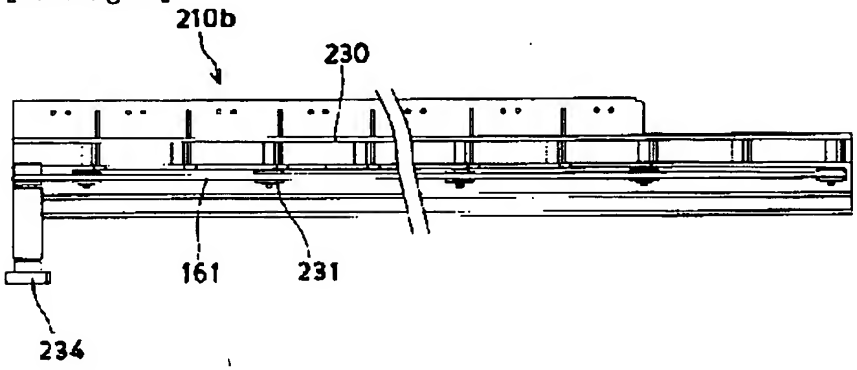

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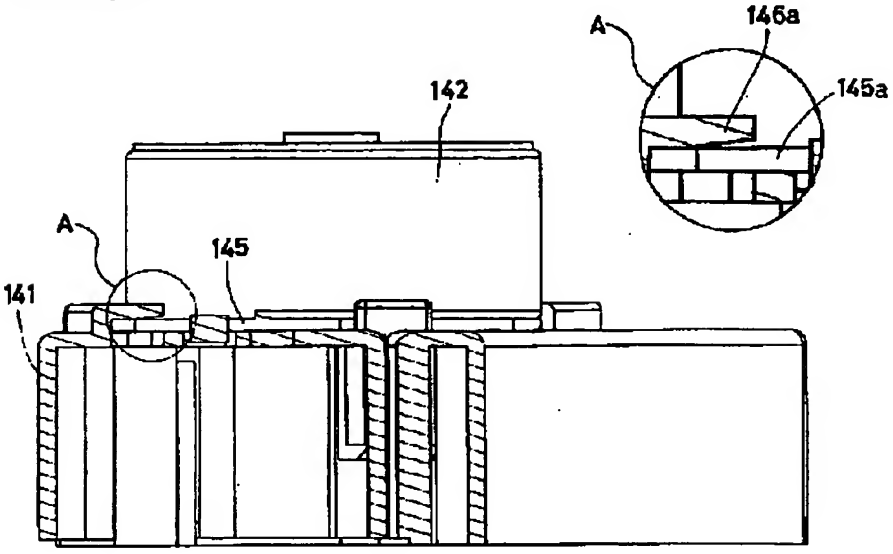

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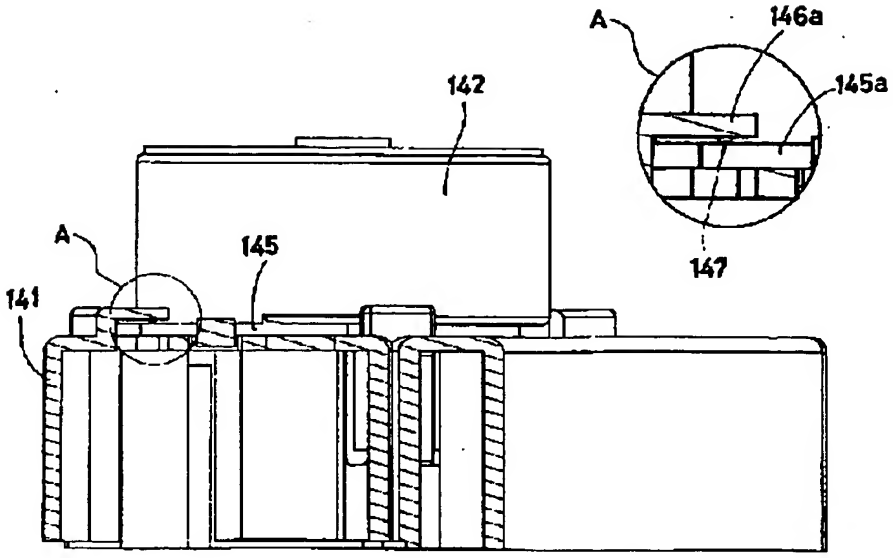

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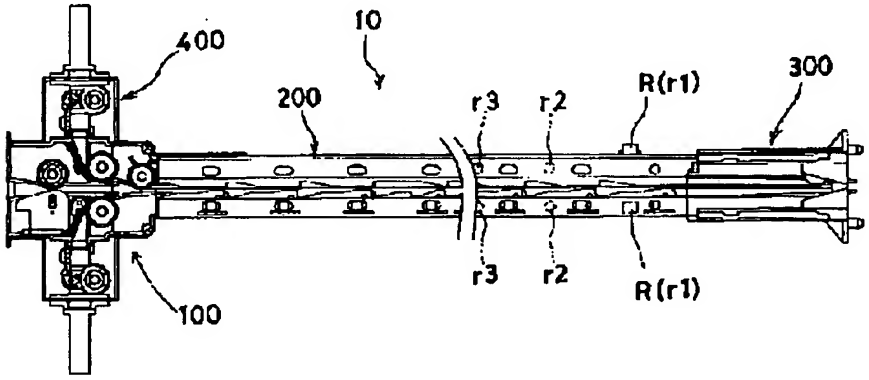

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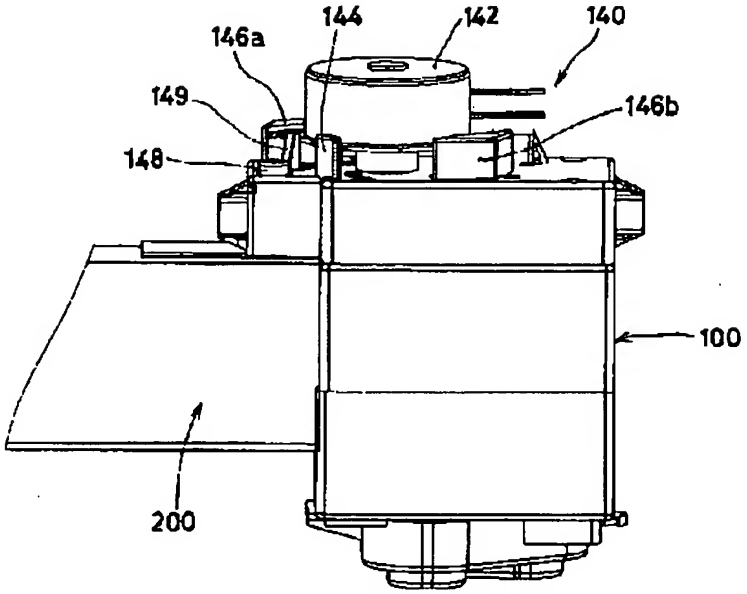

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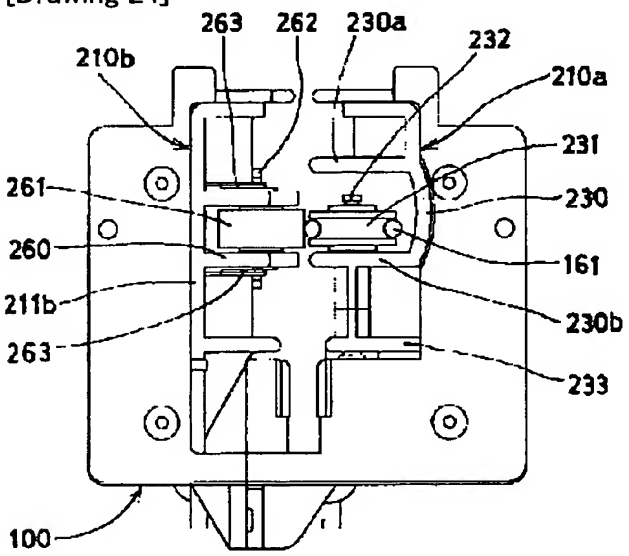

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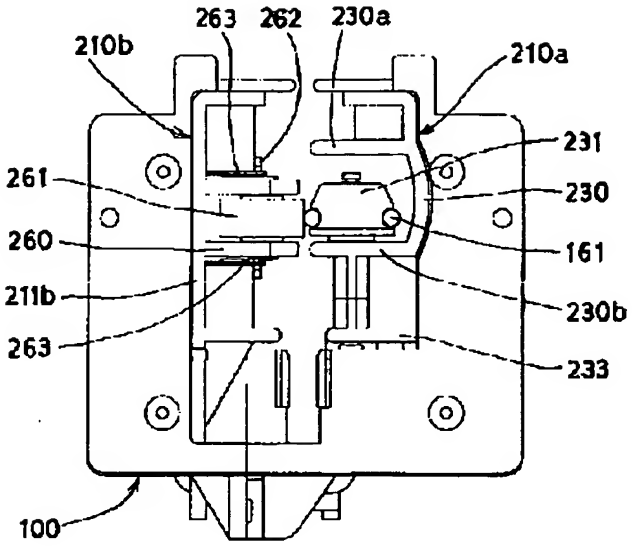

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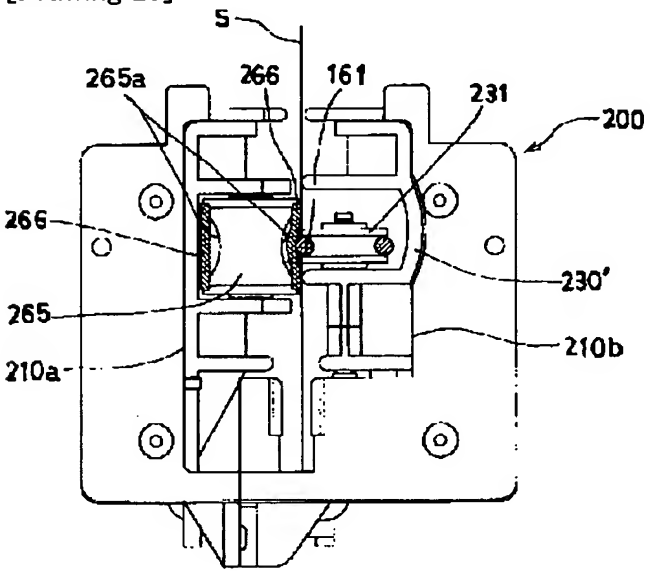

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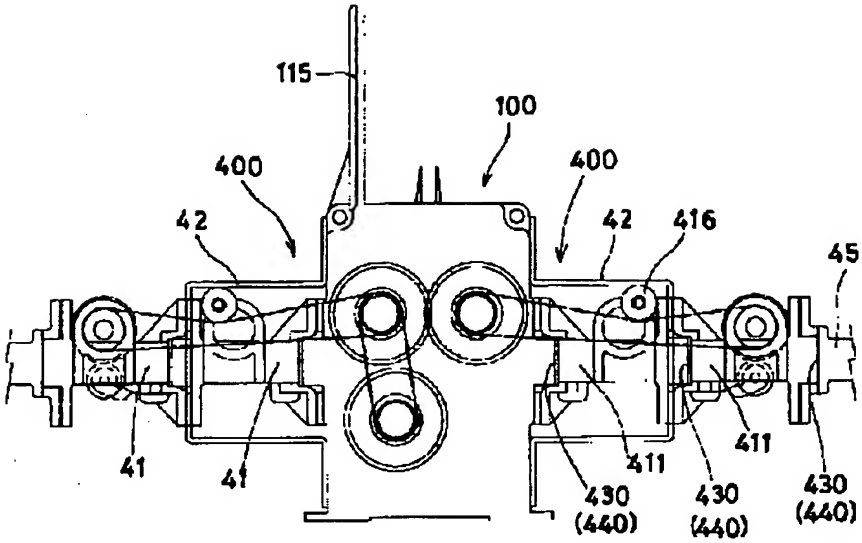

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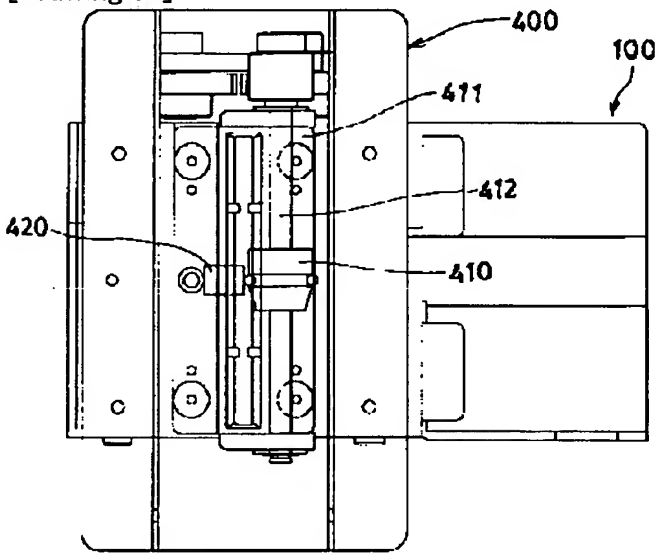

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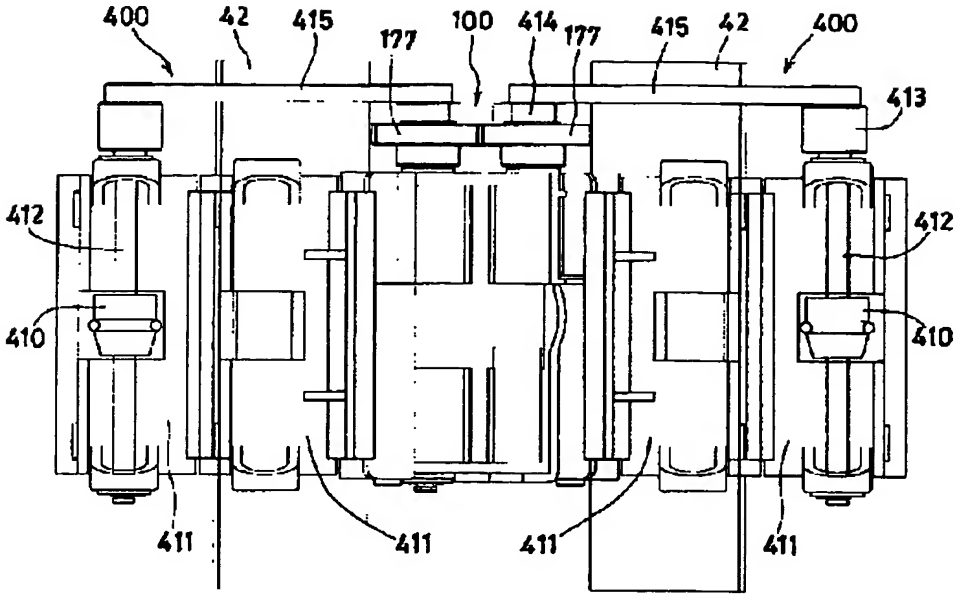

[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2001－22997
（P2001－22997A）
(43)公開日　平成13年１月26日(2001.1.26)

(51)Int.Cl.'	識別記号	ＦＩ	ﾃｰﾏｺｰﾄﾞ(参考)
Ｇ07Ｄ　9/00	４１６	Ｇ07Ｄ　9/00	４１６Ｃ　３Ｅ０４０

審査請求　未請求　請求項の数15　ＯＬ　（全 23 頁）

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(22)出願日　平成11年７月12日(1999.7.12)

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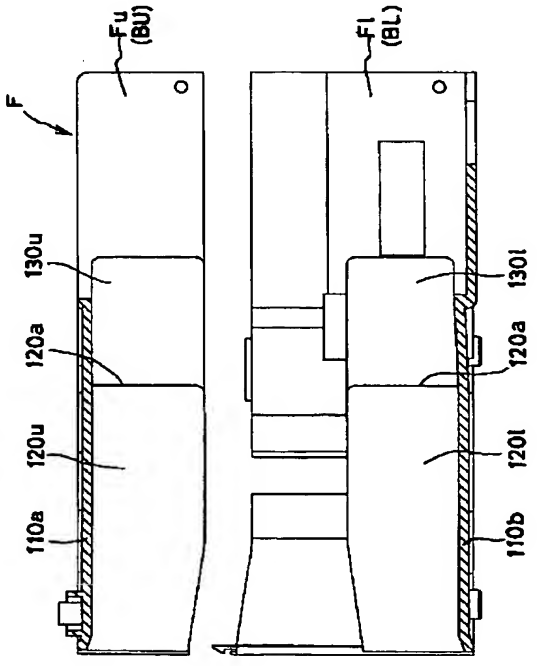
弁理士　福田　武通　（外２名）

最終頁に続く

(54)【発明の名称】　紙幣搬送装置

(57)【要約】
【課題】　組み立てが容易で紙幣詰まりが発生しない紙幣搬送装置を安価に提供する。
【解決手段】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、合流搬送駆動部は、上流側の搬送通路部から送り込まれる紙幣を下流側の搬送通路部に案内すると共に、紙幣投入機側から送り込まれる紙幣を搬送通路部に側方から合流させるように案内する受入れガイド部材１２０，φ１３０を有し、上記合流搬送駆動部を、上側フレームＦｕと上側受入れガイド部材１２０ｕ，１３０ｕとを合成樹脂で一体成型した上側ブロックＢＵと、下側フレームＦｌと下側受入れガイド部材１２０１，１３０１とを合成樹脂で一体成型した下側ブロックＢＬとに、分割構成した。



1

【特許請求の範囲】

【請求項１】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、

合流搬送駆動部は、上流側の搬送通路部から送り込まれる紙幣を下流側の搬送通路部に案内すると共に、紙幣投入機側から送り込まれる紙幣を搬送通路部に側方から合流させるように案内する受入れガイド部材を有し、

上記合流搬送駆動部を分割構造とすると共に、当該合流搬送駆動部のフレームと受入れガイド部材とを合成樹脂で一体成型したことを特徴とする紙幣搬送装置。

【請求項２】　合流搬送駆動部を、上側フレームと上側受入ガイド部材とを一体成型した上側ブロックと、下側フレームと下側受入ガイド部材とを一体成型した下側ブロックとに、分割した請求項１に記載の紙幣搬送装置。

【請求項３】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、

搬送通路部を、合成樹脂で成型した第１基体ケース及び第２基体ケースで構成し、第１基体ケースには、ブリーレール及び搬送レールを一体に設け、第２基体ケースには、ローラレール及び搬送レールを一体に設けたことを特徴とする紙幣搬送装置。

【請求項４】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、

合流搬送駆動部と紙幣投入機の間に、紙幣投入機から送り出された紙幣を合流搬送部の入口に送り込む紙幣中継装置を介在させ、

上記紙幣中継装置は、紙幣の送り機構と当該送り機構を収納可能なケース兼スペーサとを備え、

上記送り機構は、ベース体の上下方向に回転自在に設けた回転軸と、この回転軸の中間に設けた回転ブーリと、この回転ブーリに圧接するように付勢された圧接ローラとを備えており、

上記ベース体は、一端に合流搬送部のフレームに設けた連結部に嵌合接続可能な接続部を有すると共に、他端に上記フレームの連結部と同形状の連結部を有し、当該ベース体またはケース兼スペーサを互に連結可能なように構成してあり、

上記回転ブーリを合流搬送駆動部の駆動軸に駆動ベルトで連絡して回転駆動するようにしたことを特徴とする紙幣搬送装置。

【請求項５】　紙幣中継装置を複数組み合せることで、

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異なる島幅に対応するようにした請求項４に記載の紙幣搬送装置。

【請求項６】　紙幣中継装置の島幅に対応する位置に紙幣検出用センサの取付孔を開設した請求項４または５に記載の紙幣搬送装置。

【請求項７】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、

搬送通路部を構成する基体ケースに、上面にカット面を形成した片持ち構造のブーリを設けると共に、駆動ローラと搬送ベルトを合流搬送装置から分離し、

上記ブーリに架け渡す搬送ベルトの着脱を容易にしたことを特徴とする紙幣搬送装置。

【請求項８】　搬送通路部を、固定側の第１基体ケースと開放可能な第２基体ケースとで構成し、上記ブーリを開放側の第２基体ケースに設けて、搬送ベルトを第２基体ケースごと交換可能にした請求項７に記載の紙幣搬送装置。

【請求項９】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、

駆動源のモータを取り付ける配線ボックスに、側面方向に開口するモータ支持部と出没可能に構成したモータ固定手段とを設け、モータに延設した取付片をモータ支持部に係止させると共に、突出状態のモータ固定手段でモータを固定するようにした紙幣搬送装置。

【請求項１０】　駆動源のモータにシンクロナスモータを用いた請求項９に記載の紙幣搬送装置。

【請求項１１】　配線ボックスのモータ取付面とモータのモータ取付板との間に隙間が生じるように突起を設け、モータの放熱を行うようにした請求項９または１０に記載の紙幣搬送装置。

【請求項１２】　モータ支持部を開口端が広く奥が狭いテーパー部とした請求項９ないし１１の何れかに記載の紙幣搬送装置。

【請求項１３】　紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、

搬送通路部に、紙幣の下端付近をガイドする溝状の紙幣ガイドを設けたことを特徴とする紙幣搬送装置。

【請求項１４】紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送

装置であって、
搬送通路の先端部分に、ペレット等が落下可能な排出口を設けたことを特徴とする紙幣搬送装置。
【請求項１５】紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、
搬送通路部に設ける圧接ローラの側周面に凹陥部を設けると共に、当該圧接ローラに無端平ベルトを架け渡し、上記圧接ローラに対応するプーリには無端丸ベルトを架け渡し、
上記無端平ベルトと無端丸ベルトとを圧接させて搬送する紙幣を挟持するようにしたことを特徴とする紙幣搬送装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、パチンコ台などの遊技台を複数配設した背面側において、台間玉貸機や両替機等に設けた紙幣投入機に投入された紙幣を搬送（回収）するための紙幣搬送装置に関し、詳しくは紙幣の搬送通路を構成し、且つ紙幣の搬送通路の一部を開閉可能に形成した紙幣搬送ユニットを複数連結して構成する紙幣搬送装置に関する。
【０００２】
【従来の技術】パチンコ遊技店等において使用する紙幣と硬貨兼用の台間玉貸機（以下、玉貸機と記す）が公知なものとして知られている。その中にあって、近年では千円紙幣はもとより、五千円、一万円紙幣が使用できる玉貸機も出現している。このような背景の中でそれら紙幣を確実に回収する紙幣搬送装置の果たす役割は大きい。
【０００３】従来、この種の紙幣搬送装置としては、紙幣の挟持方向の一方に開口する基体ケースと、この基体ケースの開口を閉鎖する開閉自在な開閉ケースとから構成され、前記基体ケースに搬送用の無端丸ベルトが取り付けられ、前記開閉ケースには上記無端丸ベルトとの協働により紙幣を挟持して搬送する複数のローラが取り付けられている。
【０００４】一方、列設した遊技台に沿って形成する紙幣搬送路には、玉貸機に投入された紙幣を側方から合流させるための合流搬送駆動部が設けてある。この合流搬送駆動部は、紙幣搬送路を上流から下流へ搬送される紙幣と紙幣投入機に投入された紙幣とを合流させるためのガイド部材を、箱形フレーム内に収設することにより構成してある。
【０００５】一方、紙幣搬送路等で紙幣詰まりが発生した場合には、店員が前記紙幣搬送装置の開閉ケースを基体ケースに対して開放操作することにより、紙幣の挟持状態が解除され、紙幣搬送路内に詰まった紙幣の除去等を敏速に行える構造になっている。これは、例えばカールした紙幣や折れ曲がった紙幣など、種々様々な癖の紙幣が玉貸機に投入されるため、その紙幣詰まり時の作業性を考慮してためである。
【０００６】
【発明が解決しようとする課題】従来の紙幣搬送装置は、一般に板金加工された多数のパーツを組み立てて各機能部を形成し、これらの機能部を組み合せて装置全体を構成している。このため、組み立てに多大な手数がかかるばかりではなく、組立位置が僅かでも狂うと、この狂いによって紙幣がスムーズに流れなくなって紙幣詰まりが発生する恐れがあった。また、部品点数が多く、部品代や人件費等の組み立てコストが嵩み、結局、高い製品となっていた。
【０００７】本発明は、上記に鑑み提案されたもので、組立、保守が容易で紙幣詰まりが発生しない紙幣搬送装置を安価に提供することを目的とする。
【０００８】
【課題を解決するための手段】上記目的を達成するため請求項１に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、合流搬送駆動部は、上流側の搬送通路部から送り込まれる紙幣を下流側の搬送通路部に案内すると共に、紙幣投入機側から送り込まれる紙幣を搬送通路部に側方から合流させるように案内する受入れガイド部材を有し、上記合流搬送駆動部を分割構造とすると共に、当該合流搬送駆動部のフレームと受入れガイド部材とを合成樹脂で一体成型したことを特徴とする紙幣搬送装置である。請求項２に記載した発明は、請求項１の構成に加えて、合流搬送駆動部を、上側フレームと上側受入ガイド部材とを一体成型した上側ブロックと、下側フレームと下側受入ガイド部材とを一体成型した下側ブロックとに、分割した紙幣搬送装置である。
【０００９】請求項３に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部を、合成樹脂で成型した第１基体ケース及び第２基体ケースで構成し、第１基体ケースには、ブリーレール及び搬送レールを一体に設け、第２基体ケースには、ローラレール及び搬送レールを一体に設けたことを特徴とする紙幣搬送装置である。
【００１０】請求項４に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、合流搬送駆動

部と紙幣投入機の間に、紙幣投入機から送り出された紙幣を合流搬送部の入口に送り込む紙幣中継装置を介在させ、上記紙幣中継装置は、紙幣の送り機構と当該送り機構を収納可能なケース兼スペーサとを備え、上記送り機構は、ベース体の上下方向に回転自在に設けた回転軸と、この回転軸の中間に設けた回転ブーリと、この回転ブーリに圧接するように付勢された圧接ローラとを備えており、上記ベース体は、一端に合流搬送部のフレームに設けた連結部に嵌合接続可能な接続部を有すると共に、他端に上記フレームの連結部と同形状の連結部を有し、当該ベース体またはケース兼スペーサを互に連結可能なように構成してあり、上記回転ブーリを合流搬送駆動部の駆動軸に駆動ベルトで連絡して回転駆動するようにしたことを特徴とする紙幣搬送装置である。請求項５に記載した発明は、請求項４の構成に加えて、紙幣中継装置を複数組み合せることで、異なる島幅に対応するようにした紙幣搬送装置である。請求項６に記載した発明は、請求項４または５の構成に加えて、紙幣中継装置の島幅に対応する位置に紙幣検出用センサの取付孔を開設した紙幣搬送装置である。

【００１１】請求項７に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部を構成する基体ケースに、上面にカット面を形成した片持ち構造のブーリを設けると共に、駆動ローラと搬送ベルトを合流搬送装置から分離し、上記ブーリに架け渡す搬送ベルトの着脱を容易にしたことを特徴とする紙幣搬送装置である。請求項８に記載した発明は、請求項７の構成に加えて、搬送通路部を、固定側の第１基体ケースと開放可能な第２基体ケースとで構成し、上記ブーリを開放側の第２基体ケースに設けて、搬送ベルトを第２基体ケースごと交換可能にした紙幣搬送装置である。

【００１２】請求項９に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、駆動源のモータを取り付ける配線ボックスに、側面方向に開口するモータ支持部と出没可能に構成したモータ固定手段とを設け、モータに延設した取付片をモータ支持部に係止させると共に、突出状態のモータ固定手段でモータを固定するようにした紙幣搬送装置である。請求項１０に記載した発明は、請求項９の構成に加えて、駆動源のモータにシンクロナスモータを用いた紙幣搬送装置である。請求項１１に記載した発明は、請求項９または１０の構成に加えて、配線ボックスのモータ取付面とモータのモータ取付板との間に隙間が生じるように突起を設け、モータの放熱を行うようにした紙幣搬送装置である。請求項１２に記載した発明は、請求項９ないし１１の構成に加えて、モータ支持部を開口端が広く奥が狭いテーパー部とした紙幣搬送装置である。

【００１３】請求項１３に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部に、紙幣の下端付近をガイドする溝状の紙幣ガイドを設けたことを特徴とする紙幣搬送装置である。

【００１４】請求項１４に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路の先端部分に、ペレット等が落下可能な排出口を設けたことを特徴とする紙幣搬送装置である。

【００１５】請求項１５に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部に設ける圧接ローラの側周面に凹陥部を設けると共に、当該圧接ローラに無端平ベルトを架け渡し、上記圧接ローラに対応するブーリには無端丸ベルトを架け渡し、上記無端平ベルトと無端丸ベルトとを圧接させて搬送する紙幣を挟持するようにしたことを特徴とする紙幣搬送装置である。

【００１６】

【発明の実施の形態】以下、図面に基づいて本発明の実施形態を説明する。図１は、隔台タイプ（遊技台２台置きに台間にあるいは台の上方に玉貸機が配置されている）の紙幣搬送装置（紙幣搬送ユニット）１０の一実施形態を示している。図２は全台タイプ（遊技台１台置きに台間にあるいは台の上方に玉貸機が配置されている）の紙幣搬送装置（紙幣搬送ユニット）１０の一実施形態を示している。尚、以下の説明において、紙幣搬送装置１０と称した場合、複数連結して紙幣搬送装置全体を構成するための紙幣搬送ユニットを示すものとする。

【００１７】これらの実施形態の紙幣搬送装置１０は、合流搬送駆動部１００と搬送通路部２００とから構成されている。搬送通路部２００は、基体ケース２１０と開閉ケース２２０とから成り、その先端にはジョイント部材３００が取り付けられている。そして、上記紙幣搬送装置１０を複数連結して遊技店の島に配設される紙幣搬送装置全体が構成される。尚、開閉ケース２２０は、施錠装置５を介して取り付けてあり、無暗に開閉できないように構成してセキュリティを高めている。

【００１８】各紙幣搬送装置１０は、通常、背中合わせに配設した２列の遊技台Ｐの背面側の空間に水平方向

に、且つ、その合流搬送駆動部１００が両側の玉貸機Ｑに投入された紙幣Ｓ２を受け入れられる位置になるように配置され、ジョイント部材３００を介して隣りの紙幣搬送装置１０に連結する。そして、遊技店の島の長さに対応する長さになるように複数連結されている。

【００１９】合流搬送駆動部１００は、例えば図４に示すように、上流側の紙幣搬送装置１０から送り出された紙幣Ｓ１、並びに玉貸機Ｑに投入された紙幣Ｓ２を取り込んで搬送通路部２００へ送り出すものである。この合流搬送駆動部１００は、中空長方形状に分割形成したフレームＦの対向する側壁１１１に紙幣が通過可能に開設した縦方向の長穴１１２の周囲の上流側縁部に、第１の受入れガイド部材１２０を形成し、長穴１１２の下流側縁部に第２の受入れガイド部材１３０を形成する。これらの受入れガイド部材１２０，１３０は、合成樹脂により上記フレームＦと一体に形成する。

【００２０】例えば図１７及び図１８に示すように、第１の受入れガイド部材１２０は、上流側の紙幣搬送装置１０からの紙幣Ｓ１を受け入れてガイドする第１の通路Ａを形成するための第１通路形成板部１２１と、この第１通路形成板部１２１の中間部において連設された、側方の玉貸機Ｑからの紙幣Ｓ２を受け入れてガイドする第２の通路Ｂを形成するための、湾曲した第２通路形成板部１２２とを備えていて、この第２通路形成板部１２２の基端が長穴１１２の縁部に連設している。

【００２１】第１の受入れガイド部材１２０は、第１通路形成板部１２１の上流側端部が上流側に向かって僅かに開くように傾斜しており、この端部が合流搬送駆動部１００を構成するフレームＦの紙幣入口１１３の縁部に連設している。

【００２２】このように、第１通路形成板部１２１の上流側端部を、小さく開くテーパー形状にすると、紙幣Ｓ１のカールした先端が当たってもそのまま正しい方向へ案内されるため紙幣入口１１３付近で紙幣詰まりが発生することがなくなる。

【００２３】そして、フレームＦにおいて、第１の受入れガイド部材１２０の第１通路形成板部１２１によって、上流側の紙幣搬送装置１０からの紙幣Ｓ１を受け入れてガイドする第１の通路Ａが形成される。一方、第２の受入れガイド部材１３０は、第１の受入れガイド部材１２０の第２通路形成板部１２２に対応して湾曲した通路形成板部１３２をフレームＦに連設してなり、上記第１の受入れガイド部材１２０の第２通路形成板部１２２と、第２の受入れガイド部材１３０の通路形成板部１３２とによって、玉貸機Ｑからの紙幣Ｓ２を受け入れてガイドする第２の通路Ｂが形成される。

【００２４】そして、図１７及び図１８に示すように、第２の受入れガイド部材１３０の通路形成板部１３２は下流側へ長く延びて、搬送通路部２００内へ突出可能になっている。また、第１の受入れガイド部材１２０の下流側先端部１２０ａは、第２の受入れガイド部材１３０の下流側の奥深くまで延設された延設部を構成している。

【００２５】このように、下流側先端部１２０ａが奥深く延設され、且つ、極めて狭くなっているため、第２の通路Ｂ内に玉貸機Ｑから通路形成板部１３２の先端に達するまで進入した状態で待機している紙幣Ｓ２に、第１の通路Ａから来た紙幣Ｓ１が干渉されて紙幣詰まりを生じる恐れがなくなる。また、狭い第１の通路Ａを進むため、紙幣Ｓ１にシワなどがあっても、そのまま、紙幣詰まりを生じることなく真っ直ぐに進行できる。

【００２６】そして、本発明では、上記第１の受入れガイド部材１２０と、第２の受入れガイド部材１３０とが、フレームＦと共に合成樹脂で一体成型され、当該フレームＦは分割構成されている。即ち、図面に示した実施形態では、上側フレームＦｕと上側受入れガイド部材１２０ｕ，１３０ｕとを一体成型した上側ブロックＢＵと、下側フレームＦｌと下側受入れガイド部材１２０ｌ，１３０ｌとを一体成型した下側ブロックＢＬとに、分割してある。

【００２７】例えば図１３ないし図１８に示すように構成した上側フレームＦｕと下側フレームＦｌとを組み合せて、本発明に係る紙幣搬送装置１０における合流搬送駆動を構成する。このとき、上側フレームＦｕと下側フレームＦｌとの間に、第１通路形成板部１２１の水平方向に切欠き状の空隙１２４、及び第２の受入れガイド部材１３０の通路形成板部１３２の水平方向に切欠き状の空隙１３３が形成される。そして、この空隙１３３には、後述する駆動ローラ１６０ａ、１６０ｂ、無端丸ベルト１６１、摩擦リング１６２が進入することになる。

【００２８】上記のように分割構成した合流搬送駆動部１００によれば、部品点数が著しく減少すると共に、部品代及び組み立てコストを削減可能である。また、受入れガイド部材の位置が一定なり、均一な品質の製品を提供できる。しかも、組付誤差等により、段差や隙間等が発生することがないので、紙幣詰まりの原因を排除することができる。

【００２９】フレームＦの底壁には、図２０に示すように、モータユニット１４０が固定されている。モータユニット１４０は、合成樹脂により一体成型された配線ボックス１４１とモータ１４２とから成る。配線ボックス１４１はモータ１４２の駆動軸を受け入れる軸孔部と、その下面にモータ１４２の取付板１４５の鍔部１４５ａ、１４５ｂを水平方向に受け入れて支持する支持部１４６ａ、１４６ｂを有すると共に、位置決めボス１４４等を有している。即ち、一対に形成した支持部１４６ａ，１４６ｂは、水平方向に開口し、図２１に示す実施形態では、開口端が広く、奥が狭まっており、モータ取付板１４５の鍔部１４５ａ，１４５ｂを受け入れ易く、一旦受け入れたときには挟まって抜け難くなっている。

また、図２２に示す実施形態では、支持部１４６ａ，１４６ｂの内側面に突起１４７を設け、この突起１４７で鍔部１４５ａ，１４５ｂを押圧するようにして抜け難くしている。尚、この突起１４７は、点又は線状に配置することができ、鍔部１４５と点接触又は線接触となるので、取付時の抵抗が削減されている。

【００３０】配線ボックス１４１にはモータ１４２の固定手段を設ける。この固定手段は、例えば、モータ１４２の取付板１４５の側縁に当接する位置に、付勢手段、例えばバネによって付勢された固定ボタン１４８を、配線ボックス１４１の底面から出没可能に設け、当該固定ボタン１４８が底面から突出した状態ではモータ取付板１４５の回動を阻止し、固定ボタン１４８が配線ボックス１４１内に後退した状態のときにモータ取付板１４５の回動を許容するように構成する。また、上記固定ボタン１４８を、一部切欠を介して配線ボックス１４１と共に合成樹脂で一体成型し、合成樹脂の弾性を付勢手段に利用してもよい。

【００３１】従って、モータ１４２を配線ボックス１４１に固定するには、モータ１４２の回転軸を、配線ボックス１４１の軸孔に挿入すると共に、固定手段の固定ボタン１４８を配線ボックス１４１内に押し込みながらモータ取付板１４５の鍔部１４５ａ，１４５ｂが、支持部１４６ａ，１４６ｂに嵌入するように回動させる。この回動が完了して、鍔部１４５ａ，１４５ｂが支持部１４６ａ，１４６ｂに係止すると、固定ボタン１４８が突出して、取付板１４５の側縁に係止する。従って、モータの取付板１４５は、戻り回動が阻止されて、配線ボックス１４１に固定される。一方、モータ１４２を取り外すときには、固定ボタン１４８を押し込んだ状態でモータ取付板１４５を回動させて支持部１４６ａ，１４６ｂとの係止を解いて引き抜けばよい。

【００３２】上記のようなモータユニット１４０には、シンクロナスモータを用いるとよい。シンクロナスモータは、従来の紙幣搬送装置１０に使われていたギヤードモータに比べて、歯車装置を有しないため小型で安価である。そして、シンクロナスモータを用いれば、モータ自体の高さが低くなるので、紙幣搬送装置１０の全体の高さを低く構成することができ、狭い島内における設置が容易になる。また、本発明にあっては、従来、単にモータの回転を伝える伝達ギヤとは異なり、後述する歯車１７，１８，１９とで減速をなしている。

【００３３】しかも、上記のような構成のモータユニット１４０によれば、モータ１４２の交換も極めて容易であり、ドライバー等の工具を用いることなく作業ができ、遊技台Ｐの背面側に残された狭い内部空間における作業に極めて有効である。

【００３４】一方、図２３に示す他の実施形態のように、例えば台座１４９を設けることにより、モータ取付板１４５と配線ボックス１４１の底面との間に隙間を形成し、取付板１４５と底面とが密着しないようにすると、モータ１４２の放熱がよくなり、モータ１４２の加熱を防止することができる。また、溝により取付板１４５とモータ取付板１４５の底面との間に隙間を形成するようにしてもよい。

【００３５】前記した合流搬送駆動部１００を構成するフレームＦの底壁１１０ｂと上壁１１０ａ間、即ち上側ブロックＢＵと下側ブロックＢＬとの間には、１つの駆動軸１７０（図８参照）が垂直方向に回転自在に取り付けられている。また、底壁の下方において、駆動軸１７０の下端に設けた歯車１７と、モータ１４２の駆動軸の歯車１８と駆動軸１７３の歯車１９とが噛み合って、モータ１４２の回転は駆動軸１７０、１７３に伝達されるようになっている。

【００３６】また、上側ブロックＢＵの上壁１１０ａと下側ブロックＢＬの底壁間には、同様に垂直に２つの従動軸１７１、１７２が回動自在に取り付けられていて、上壁１１０ａの上方において、駆動軸１７０、従動軸１７１に固定された同一径のプーリ１７４ａ、１７４ｂ間に装着されたベルト１７５によって駆動軸１７０と同一方向に同一速度で従動軸１７１は回転する。また、駆動軸１７０と従動軸１７２には互いに噛み合った同一歯数の歯車１７６、１７７が固定されていて、従動軸１７２は逆方向に同一速度で回転する（図１０参照）。

【００３７】従動軸１７１は、図８に示すように、第１の受入れガイド部材１２０より僅かに側壁１１１ａ側に位置して、中間部に、即ち、第１の受入れガイド部材１２０の第１通路形成板部１２１の水平方向の空隙１２４に対応した位置において、プーリ１５０が固定されている。プーリ１５０は、上下方向の中央において環状溝を有し、この環状溝にゴムなどの摩擦体からなる無端丸ベルト１５１が外方に突出した状態で取り付けられていて、第１の通路Ａ内に僅かに突出している。尚、全台タイプの紙幣搬送装置１０にあっては、プーリ１５０には環状リングなどが取り付けられる。尚、前記駆動軸１７０は、フレームＦに開設した軸受部材取付孔１７９に装着した軸受部材（図示せず）に軸支されていおり、上記他の従動軸１７１，１７２に付いても同様である。

【００３８】これに対向して、フレームＦの下半部分を構成する下側ブロックＢＬの側壁１１１ｂに固定されたローラベース１５２に、外周に摩擦体を有する圧接ローラ１５３が回転自在に軸１５４によって取り付けられている。この軸１５４はバネ等の付勢手段（図示せず）によってプーリ１５０側へ付勢されているため、第１の通路Ａにおいて回転駆動するプーリ１５０の無端丸ベルト１５１に圧接ローラ１５３は圧接して回転する。このため、上流側の紙幣搬送装置１０から送り出された紙幣Ｓ１は、第１の通路Ａにおいてプーリ１５０の無端丸ベルト１５１と圧接ローラ１５３との間に狭持されて取り込まれる。

【００３９】駆動軸１７０には、第２の通路Ｂの第２の受入れガイド部材１３０の通路形成板部１３２より僅かに外方に位置していて、その上下方向の中間部、即ち、通路形成板部１３２側の空隙１３３に対応した位置において、駆動ローラ１６０ａが第２の通路Ｂ内に突出した状態で固定されている。この駆動ローラ１６０ａには摩擦リング１６２が装着され、この摩擦リング１６２にはバネで付勢された送りローラ１６４が当接する。尚、この送りローラ１６４は、上側ブロックＢＵ及び下側ブロックＢＬに設けた装着爪１２５に装着する装着板１２７に揺動自在に取り付けられ、上側ブロックＢＵと下側ブロックＢＬとの間に形成される空隙１２４から突出した状態となる（図１９参照）。

【００４０】このため、本実施形態では、玉貸機Ｑから第２の通路Ｂへ送り出された紙幣Ｓ２は、上記送りローラ１６４によって摩擦リング１６２に押し付けられ、挟持搬送されるため、取り込みが確実となる。従って、腰のない紙幣やシワになってアコーデオン状になっているために従来装置では取り込めないような紙幣であっても、確実にキャッチ可能とすることができる。

【００４１】また、図示の実施形態では、上流からの紙幣Ｓ１を挟持搬送する第１の搬送通路Ａと、玉貸機Ｑからの紙幣Ｓ２を搬送する第２の搬送通路Ｂとが合流する合流搬送駆動部１００において、第２の搬送通路Ｂの終端を、駆動源に連絡した駆動ローラ１６０ａに対して接近させる受入ガイド１２６を設けている。即ち、この実施形態では、上記送りローラ１６４の外周面と無端丸ベルト１６１の接点に向けてリブ状に突出する受入ガイド１２６が設けてある。この受入ガイド１２６は、前記した装着板１２７に一体的に設けられ、送りローラ１６４の上下に位置すると共に、駆動ローラ１６０ａまたは１６０ｂに対向して一対に設けてある。

【００４２】上記のような受入ガイド１２６によれば、玉貸機Ｑから第２の搬送通路Ｂへ送り出された紙幣Ｓ２の先端がたとえカールしていても紙幣Ｓ２の先端が折れることなく、当該紙幣Ｓ２を送りローラ１６４と無端丸ベルト１６１との接点方向に確実に誘導して送りローラ１６４の食いつきを良好にすることができる。即ち、玉貸機Ｑから送り込まれた紙幣Ｓ２を、搬送通路部２００へ確実に合流させることができる。

【００４３】また前記と同様に第２従動軸１７２は、第２の通路Ｂの第２の受入れガイド部材１３０の通路形成板部１３２より僅かに外方に位置していて、第１の従動軸１７１と同一高さに第２の通路Ｂに突出した状態で駆動ローラ１６０ｂが固定されている。そして駆動ローラ１６０ｂの環状溝にはゴムなどの摩擦体から成る摩擦リング１６２が嵌着されていて、摩擦リング１６２は第２の通路Ｂに突出している。そして摩擦リング１６２に対向して、送りローラ１６４がバネを介して第１の受入れガイド部材１２０の前端側空隙１２４より突出した状態で取り付けられている。このため、玉貸機Ｑから送り出された紙幣Ｓ２は送りローラ１６４と摩擦リング１６２とで上記と全く同様の原理で確実に挟持されて取り込まれる。

【００４４】合流搬送駆動装置を構成するフレームＦの上壁１１０ａには、ギヤカバー１８０が取り付けられている。このギヤカバー１８０の上流側には、上流側の紙幣搬送装置１０の開閉ケース２２０の開放を抑止する施錠装置５の係止部が突出して設けられ、本体部５２の係止穴と係脱する。また、下流側先端には開閉ケース２２０の上流側端部の上面を押さえ、該開閉ケース２２０の取り外しを規制するように成した係止片が形成されている。尚、図１に示す隔台タイプ用紙紙幣搬送装置１０にあっては、係止片が上記係止片と同様、上流側の搬送通路部２００の開閉ケース２２０の上面を押さえ、該開閉ケース２２０の着脱を規制している。

【００４５】合流搬送駆動部１００のフレームＦの下方部分を構成する下側ブロックＢＬの側壁１１１には、図１３ないし図１８に示すように、延設固定板１１５が一体に突設されていて、この延設固定板１１５に搬送通路部２００を構成する基体ケース２１０を固定して紙幣搬送装置１０を構成する。

【００４６】搬送通路部２００は、例えば図３で示すように、第１基体ケース２１０ａと、この第１基体ケース２１０ａに開放自在に取り付けられる第２基体ケース２１０ｂとからなる基体ケース２１０と、該基体ケース２１０の上方側に着脱自在に取り付けられた開閉ケース２２０とからなる。尚、図３には開閉ケース２２０は画かれていない。

【００４７】第１基体ケース２１０ａの側壁２１１ａの内面には、図３や図５或いは図２４等に示すように、断面ほゞコ字状に形成したブーリレール２３０及び台座レール２３３が水平方向に設けられ、このブーリレール２３０を構成する上板２３０ａと下板２３０ｂとの間には、台座レール２３３から起立した上下方向の軸２３２によって複数のブーリ２３１が回転自在に片持ち状態で取り付けられている。そして、前記合流搬送駆動部１００における駆動軸１７３の駆動ローラ１９０と、第１基体ケース２１０ａの各ブーリ２３１とに、無端丸ベルト１６１が架け渡されている。

【００４８】そして、上記のような構造の第１基体ケース２１０ａは、合成樹脂により一体成型により構成する。従って、従来品のように各部材をネジ等により個々に取り付ける必要がなく、組み立て工数の大幅な削減が可能である。しかも、組付時の誤差も生じないので、品質の安定した製品となる。また、部品点数も大幅に減少するので、管理等も容易になる。

【００４９】また、図２５に示すように、ブーリ２３１の側面をテーパー状にする。即ち、自由端側を小径に、軸支側を大径に形成する。このように形成すると、前記

した片持ち構造と相俟って、無端丸ベルト１６１の掛け替えが極めて容易になる。

【００５０】一方、上記のような第１基体ケース２１０ａに開閉自在に取り付けられる第２基体ケース２１０ｂも、以下のような構成で合成樹脂により一体成型されている。即ち、第２基体ケース２１０ｂの側壁２１１ｂの内面には、第１基体ケース２１０ａのブーリレール２３０と対向する高さにおいて、ローラレール２６０が設けてある。このローラレール２６０に、各ブーリ２３１と対向する各圧接ローラ２６１が軸２６２によって回動自在に、且つバネ２６３によってブーリ２３１側へ付勢されて取り付けられている。

【００５１】このように第１基体ケース２１０ａ側の各ブーリ２３１の無端丸ベルト１６１に、第２基体ケース２１０ｂ側の圧接ローラ２６１が圧接されている。このため、合流搬送駆動部１００から送り出された紙幣は厚さ方向から無端丸ベルト１６１と圧接ローラ２６１に挟持されてスムーズに搬送されている。

【００５２】そして、合流搬送駆動部１００側に最も近いブーリ２３１ａ及び圧接ローラ２６１ａは、玉貸機Ｑから送り出されて待機状態の紙幣Ｓ２の先端位置より僅かに下流側に位置するように配置されている。このため、待機状態の玉貸機Ｑからの紙幣Ｓ２によって最上流側のブーリ２３１ａの無端丸ベルト１６１及び圧接ローラ２６１ａが覆われた状態にならない。従って、第１の通路Ａから搬送された紙幣Ｓ１が上記無端丸ベルト１６１と圧接ローラ２６１ａで確実に挟持されるため、紙幣詰まりが生じることがない。

【００５３】尚、この実施形態では、ローラレール２６０の搬送面２６０ｄを、圧接ローラ２６１の軸着位置において、拡幅させると共に、緩やかな曲面形状を備える波型を適宜間隔をおいて形成すると共に、圧接ローラ２６１を越えた位置において急激な段部２６０ｅを介して縮幅させた。このため、先端がカールして圧接ローラ２６１側を向いた紙幣であっても、圧接ローラ２６１に巻き込まれることがなく、この圧接ローラ２６１を乗り越えるときに、騒音が発生しなくなる。

【００５４】また、この実施形態では、例えば図６に示すように、ローラレール２６０の上流側の端部をカット面２６０ａとし、このカット面２６０ａに続く誘導面２６０ｂをローラレール２６０の基端面２６０ｃとほゞ平行に形成し、前記した搬送面２６０ｄに連絡した。

【００５５】上記のようなローラレール２６０の受入部によれば、先端がカールした紙幣であっても隙間に入り込んで詰まることがない。また、隣接する紙幣搬送装置１０のジョイント部材３００とオーバーラップしている距離が短くても、紙幣を確実に搬送通路部２００に誘導することができるので紙幣詰まりが発生しない。しかも、オーバーラップさせるためにジョイント部材３００に設ける突出片３０１を小さく形成できるので、突出量が少なく、取り扱いが容易である。

【００５６】更に、この実施形態では、上記圧接ローラ２６１を付勢するバネ２６３を比較的弾性力の弱いものとしてある。このため、新札を二つ折りにした場合のように、腰が強く且つ山形が圧接ローラ２６１に向いて搬送されても、圧接ローラ２６１が山形を逃すことができ、このために起きる紙幣詰まりがない。

【００５７】本発明に係る紙幣搬送装置１０において、開放側である第２基体ケース２１０ｂ側に、搬送駆動用の無端丸ベルト１６１を設けることもできる。即ち、図２６ないし図２８に示すように、第２基体ケース２１０ｂにブーリレール２３０を設けると共に、各ブーリ２３１に丸ベルト１６１を張設する。また、合流搬送駆動部１００と連繋するように、端部のブーリ軸２３２′に連繋ギヤ２３４を設けると共に、この連繋ギヤ２３４に噛合する連動ギヤ２３５を合流搬送駆動部１００に設ける。

【００５８】そして、万一、丸ベルト１６１が切断したときには、図２８に示す第２基体ケース２１０ｂごと、交換してしまえば、極めて短時間で復旧可能であり、紙幣搬送装置１０の停止時間が極短時間となるので、遊技者に掛ける迷惑を最小限に留めることが可能になる。

【００５９】前記した実施形態では、ブーリ２３１に圧接ローラ２６１が圧接して丸ベルト１６１と共に紙幣を挟持可能なように、バネ２６３で圧接ローラ２６１を付勢しているが、本発明に係る紙幣搬送装置１０は、上記バネ２６３を省略することができる。

【００６０】そのために図２９に示す実施形態では、圧接ローラ２６５の側周面を鼓型に若干凹陥させると共に、各圧接ローラ２６５に無端平ベルト２６６を架け渡す。このような構成によれば、図２９に示すように、平ベルト２６６が無端丸ベルト１６１により押されて圧接ローラ２６５の凹陥部２６５ａに若干は入り込み、この状態では平ベルト２６６に反発力が生じるので、紙幣Ｓを挟持することができる。

【００６１】また、この実施形態では、ブーリレール２３０の壁部に丸ベルト１６１が接触しないようにブーリレール２３０の壁部２３０′を外方向に円弧状に膨出させている（図２９参照）。これにより無端丸ベルト１６１の架け替えを容易にできる。

【００６２】このような構成は、合成樹脂による一体成型によれば、極めて簡単に実現可能である。そして、前記バネ２６３を省略することにより、部品点数の大幅な削減及び組立工数の大幅な削減が可能になり、部品コスト及び人件費を大幅に削減できる。バネ２６３の取付不良や押圧力のバラツキが発生しないので、紙幣の搬送が安定し、紙幣詰まりが発生する恐れのない紙幣搬送装置を提供可能である。

【００６３】搬送通路部２００を構成する第１基体ケース２１０ａまたは第２基体ケース２１０ｂの底部には、

溝状の紙幣搬送ガイド２７０を長手方向に沿って設けることができる。この紙幣搬送ガイド２７０は、例えば図３に示すように上方が開口する樋状であって、即ち対向する一対のガイド壁２７１と、両ガイド壁２７１の下端を繋ぐ底板部２７２とからなり、この底板部２７２の上に紙幣の下辺が載り、下端付近を上記一対のガイド壁２７１、２７１が支えて、前記した無端丸ベルト１６１と圧接ローラ２６１に挟持された紙幣が進む。

【００６４】このような紙幣搬送ガイド２７０によれば、紙幣の下端部分を両側からガイドすることができるので、紙幣の横逃げを確実に防止することができる。尚、この紙幣搬送ガイド２７０は、開放側の第２基体ケース２１０ｂに設けてもよいし、両ケース２１０ａ、２１０ｂを組み合わせて形成することもできる。

【００６５】上記のような紙幣搬送ガイド２７０の下流側の端部付近、即ちジョイント部材３００側の端部付近の底板部２７２には、ペレットや異物等を排出するための開口部２７３を開設する。ペレットは、パチンコ玉を洗浄研磨するときに使用する粒状の洗浄剤であり、洗浄機から溢れて周辺に付着したペレットが保守点検で開いた開閉ケース２２０から搬送通路内に混入することがある。この混入したペレット等を放置しておくと、紙幣詰まりを引き起こす原因となるので排出しなければならない。

【００６６】そこで、本発明に係る紙幣搬送装置１０では、効率よくペレットを排出可能な位置、即ち上記したように紙幣搬送ガイド２７０の下流側端部付近（図３参照）に、排出口として開口部２７３を開設している。この位置に排出口を設けておけば、下流側の紙幣搬送装置１０にペレット等が侵入することを防止でき、紙幣詰まりを未然に防止することができる。

【００６７】紙幣投入機と合流搬送駆動部１００との間には、紙幣投入機（玉貸機Ｑ）から送り出された紙幣を合流搬送駆動部１００の入口に送り込む紙幣中継装置４００を介在させる。この紙幣中継装置４００は、遊技店によって異なる島幅の対応を図るためのものであって、即ち島の奥行が異なって紙幣投入機と合流搬送駆動部１００との距離が異なっていても、紙幣を確実に合流搬送駆動部１００に送り込むためのものである。

【００６８】そこで、この紙幣中継装置４００は、一対の回転ブーリ４１０と圧接ローラ４２０とを有する送り機構４１と、この送り機構４１を収納するケース兼スペーサ４２とを備えている。上記送り機構４１は、ベース体４１１の上下方向に回転自在に設けた回転軸４１２と、この回転中間に設けた回転ブーリ４１０と、この回転ブーリ４１０に圧接するように付勢された圧接ローラ４２０とを備えている。

【００６９】上記ベース体４１１は、合成樹脂で成型された部材であって、一端に合流搬送駆動部１００のフレームＦに設けた連結部４３０に嵌合接続可能な接続部４４０を有すると共に、他端に上記フレームＦの連結部４３０と同形状の連結部４５０を有し、当該ベース体４１１を次々に連結可能なように構成してある。

【００７０】一方、上記ベース体４１１を覆うことのできるケース兼スペーサ４２は、合流搬送駆動部１００の側壁部に固定可能である。このケース兼スペーサ４２を、ケースとして機能させるときには、前記した送り機構４１を備えるベース体４１１を収設すると共に、天板部上に、駆動ブーリ４１３を設けて、合流搬送駆動部１００の駆動ブーリ４１４との間に駆動ベルト４１５を架け渡す（図１０）。一方、スペーサとして機能させるときには、ケース内にブーリ等を設けないが、天板に駆動ベルト４１５のテンションローラ４１６を設ける（図３０）。そして、上記のような送り機構４１とケース兼スペーサ４２を適宜組み合せて所望の間隔の紙幣中継装置４００を構成する。

【００７１】上記のような紙幣中継装置４００によれば、単一の部材を組み合せることにより異なる島幅に柔軟に対応することができ、コストの削減や部品の在庫が容易になる。また、急な仕様変更にも直ちに対応可能であるなど、実用的価値が極めて高い。尚、ケース兼スペーサ４２の間隔に満たない距離の調整は、筒状スペーサ４５によって行えばよく、紙幣投入機と合流搬送駆動部１００とが、どのような間隔で配置されていても隙間なく紙幣を案内できる。

【００７２】更に、搬送通路部２００を構成するジョイント部材３００及び基体ケース２１０ａ，２１０ｂには複数の紙幣検出用センサＲの取付孔ｒ０，ｒ１，ｒ２，ｒ３，…を開設しておき、紙幣中継装置４００の島幅に対応するように適宜選択して紙幣検出用センサＲを取り付ける。これは、搬送通路部２００の上流側から送り込まれる紙幣と、紙幣投入機により側方から送り込まれる紙幣とが、合流搬送駆動部１００において重ならないようにする配慮からである。即ち、紙幣投入機に投入された際にカウントした紙幣数と、最終的にスタッカに集められた紙幣数とが一致しない不都合を防ぐためである。具体的には、図５及び図６に示す島幅の狭い実施形態では、ジョイント部材３００側に設けた取付孔ｒ０を選択してセンサＲを設けている。一方、図３３に示すように、島幅が広がって紙幣中継装置４００を用いた実施形態では、取付孔ｒ１を選択して一対のセンサＲを取り付けている。このように、島幅の広がりに対応してセンサＲの取付位置を移動させる。

【００７３】前記したようにフレームＦの延設固定板１１５に固定した第１基体ケース２１０ａには、第２基体ケース２１０ｂを着脱自在に取り付ける。これは、例えば、第１基体ケース２１０ａの底壁に取り付けた第１止着金具の係合孔に、第２基体ケース２１０ｂの側壁の下縁に取り付けた第２止着金具の係合突起を嵌脱自在に係合させればよい。このような構成によれば、係合孔に係

合させた係合突起を支点にして、第２基体ケース２１０ｂがこの係合孔を中心に第１基体ケース２１０ａに対して回動自在となり、係合を外せば第２基体ケース２１０ｂを分離できる。尚、図７は丁度第２基体ケース２１０ｂが回動して図示していない第１基体ケース２１０ａにぶら下がった状態を示している。

【００７４】図１及び図２において、組み付けた両基体ケース２１０の上面には、開閉ケース２２０を着脱自在に取り付けている。即ち、開閉ケース２２０の下縁部には、複数のピン（図示せず）が設けられていて、第１基体ケース２１０ａの上壁の穴２１４ａ及び第２基体ケース２１０ｂの上壁の穴２１４ｂ（図３参照）に上方から嵌入係合される。また、開閉ケース２２０の内側には、搬送通路部２００を搬送される紙幣の上縁部をガイドするガイド壁が設けてある。

【００７５】また、開閉ケース２２０は、第１基体ケース２１０ａ及び第２基体ケース２１０ｂと同様に、透明材で形成しておくとよい。即ち、透明材ならば外部から搬送通路内の紙幣の正常な流れや紙幣詰まりなどの状況が開閉ケース２２０を開けなくても視認可能である。

【００７６】搬送通路部２００の下流側には、ジョイント部材３００を移動自在に取り付ける。ジョイント部材３００は、例えば図９に示すように紙幣搬送ガイド２７０の先端が入り込むテーパー溝３１を備え、紙幣の受け渡しを行う。上記テーパー溝３１、即ち紙幣通路Ｃは、下流側に向かって次第に幅を狭くしてあり、更に上記テーパー溝２０１は下流側にくちばし状の突出片３０１を有している。この突出片３０１によって下流側の紙幣搬送装置１０とオーバーラップして紙幣を保持するため、確実に下流側の紙幣搬送装置１０に取り込ませることができる。

【００７７】尚、ジョイント部材３００の下流側の端面には、隔台タイプにあっては下流側の紙幣搬送装置１０の搬送通路部２００の穴に、また全台タイプにあってはフレームＦの側壁１１１の穴に挿入するための複数の接続ピン３２が水平方向に突設してある。

【００７８】そして、本発明に係る紙幣搬送装置１０は、図１及び図２に示すように、ジョイント部材３００を開閉ケース２２０を固定または解放操作自在になす施錠装置５が設けてある。そして、施錠装置５には鍵穴が設けられており、この鍵穴に抜き差し自在な鍵を挿入操作することにより、開閉ケース２２０の解放が抑止され、ジョイント部材３００の上流側への摺動が規制されると同時に、この状態にて隣合う紙幣搬送装置１０同士が連結される。

【００７９】一方、上記抑止状態が解除されると、開閉ケース２２０の取り外しが可能となり、搬送通路部２００の一部である第２基体ケース２１０ｂが解放される。

【００８０】上記の説明は、図２に示すような全台タイプの紙幣搬送装置１０における説明であるが、隔台タイプにおいては、ジョイント部材３００に並設した施錠装置５で開閉ケース２２０の開放を抑止すればよい。尚、施錠装置５は、特に必要がない遊技店にあっては、設置しなくてもよく、設置しなければ設備費の削減が可能である。

【００８１】尚、本発明の紙幣搬送装置１０の構成は、硬貨を含めた貨幣、遊技媒体としてのメダル、或は有価価値を記憶させた所謂プリペイドカード等の搬送装置として容易に適用できる。

【００８２】以上、本発明を図面の実施形態について説明したが、本発明は前記した実施形態に限定されるものではなく、特許請求の範囲に記載した構成を変更しない限り適宜に実施できる。

【００８３】

【発明の効果】以上説明したように、請求項１に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、合流搬送駆動部は、上流側の搬送通路部から送り込まれる紙幣を下流側の搬送通路部に案内すると共に、紙幣投入機側から送り込まれる紙幣を搬送通路部に側方から合流させるように案内する受入れガイド部材を有し、上記合流搬送駆動部を分割構造とすると共に、当該合流搬送駆動部のフレームと受入れガイド部材とを合成樹脂で一体成型したので、部品点数が減少すると共に、組み立てが容易になり、部品代や人件費等を大幅に削減可能である。また、組み立て時に誤差が生じないので、安定した品質の製品を提供可能である。

【００８４】請求項３に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部を、合成樹脂で成型した第１基体ケース及び第２基体ケースで構成し、第１基体ケースには、ブリーレール及び搬送レールを一体に設け、第２基体ケースには、ローラレール及び搬送レールを一体に設けたので、部品点数が減少すると共に、組み立て作業が容易になり、部品代や人件費等を大幅に削減可能である。また、組み立て時に誤差が生じないので、安定した品質の製品を提供可能である。

【００８５】請求項４に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、合流搬送駆動部と紙幣投入機の間に、紙幣投入機から送り出された紙幣を合流搬送部の入口に送り込む紙幣中継装置を介在させ、上記紙幣中継装置は、紙幣の送り機構と当該送り機

構を収納可能なケース兼スペーサとを備え、上記送り機構は、ベース体の上下方向に回転自在に設けた回転軸と、この回転軸の中間に設けた回転プーリと、この回転プーリに圧接するように付勢された圧接ローラとを備えており、上記ベース体は、一端に合流搬送部のフレームに設けた連結部に嵌合接続可能な接続部を有すると共に、他端に上記フレームの連結部と同形状の連結部を有し、当該ベース体またはケース兼スペーサを互に連結可能なように構成してあり、上記回転プーリを合流搬送駆動部の駆動軸に駆動ベルトで連絡して回転駆動するようにしたので、単一の部材を組み合せることにより異なる島幅に柔軟に対応することができ、コストの削減や部品の在庫が容易になる。また、急な仕様変更にも直ちに対応可能であるなど、実用的価値が極めて高い。

【００８６】請求項７に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部を構成する基体ケースに、上面にカット面を形成した片持ち構造のプーリを設けると共に、駆動ローラと搬送ベルトを合流搬送装置から分離し、上記プーリに架け渡す搬送ベルトの着脱を容易にしたので、迅速にベルトの交換が可能であり、遊技を中断するなどの不都合を最小限に抑えることができる。

【００８７】請求項９に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、駆動源のモータを取り付ける配線ボックスに、側面方向に開口するモータ支持部と出没可能に構成したモータ固定手段とを設け、モータに延設した取付片をモータ支持部に係止させると共に、突出状態のモータ固定手段でモータを固定するようにしたので、モータの交換作業が著しく容易になる。また、工具を必要としないので、狭い島内の空間においても迅速な作業が可能である。

【００８８】請求項１３に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部に、紙幣の下端付近をガイドする溝状の紙幣ガイドを設けたので、紙幣を安定した姿勢で搬送することができ、紙幣詰まりを未然に防止することができる。

【００８９】請求項１４に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路の先端部分に、ペレット等が落下可能な排出口を設けたので、紙幣搬送装置内へ混入したペレット等を容易に排出することができ、ペレット等の混入によるトラブルを未然に防止することができる。

【００９０】請求項１５に記載した発明は、紙幣を挟持した状態で上流側から下流側へ搬送する搬送通路部と、紙幣投入機に投入された紙幣を、上記搬送通路部に合流させると共に駆動源を有する合流搬送駆動部とを備えた遊技店に設置される紙幣搬送装置であって、搬送通路部に設ける圧接ローラの側周面に凹陥部を設けると共に、当該圧接ローラに無端平ベルトを架け渡し、上記圧接ローラに対応するプーリには無端丸ベルトを架け渡し、上記無端平ベルトと無端丸ベルトとを圧接させて搬送する紙幣を挟持するようにしたので、押圧バネが不要となる。従って、部品点数の大幅な削減及び組立工数の大幅な削減が可能になり、部品コスト及び人件費を大幅に削減できる。また、押圧バネの取付不良や押圧力のバラツキが発生しないので、紙幣の搬送が安定し、紙幣詰まりが発生する恐れのない紙幣搬送装置を提供可能である。

【図面の簡単な説明】

【図１】本発明の隔台タイプの紙幣搬送装置の一実施形態を示す斜視図である。

【図２】本発明の全台タイプの紙幣搬送装置の一実施形態を示す斜視図である。

【図３】基体ケースを開放した状態の一実施形態を示す斜視図である。

【図４】紙幣搬送装置の仕様状態を示す概略説明図である。

【図５】紙幣搬送装置の内部を示す開放状態の正面図である。

【図６】紙幣搬送装置の内部を示す開放状態の平面図である。

【図７】第２基体ケースの内側を示す正面図である。

【図８】合流搬送駆動部を示す要部の平面図である。

【図９】下部紙幣ガイド及びジョイント部材を説明する平面図である。

【図１０】合流搬送駆動部及び紙幣中継装置を示す平面図である。

【図１１】合流搬送駆動部に設けた紙幣中継装置の正面図である。

【図１２】合流搬送駆動部に設けた紙幣中継装置の側面図である。

【図１３】上下に分割構成した合流搬送装置のフレームの正面図である。

【図１４】上下に分割構成した合流搬送装置のフレームの上流側側面図である。

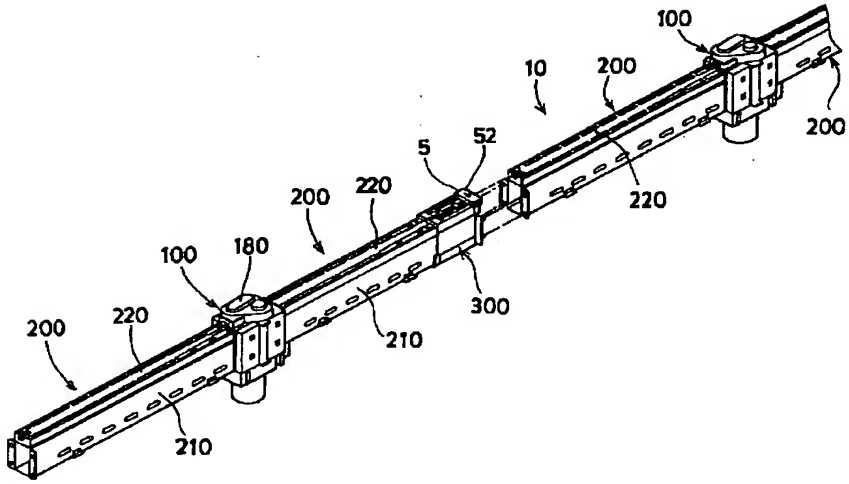
【図１５】上下に分割構成した合流搬送装置のフレームの下流側側面図である。

【図１６】上下に分割構成した合流搬送装置のフレームの縦断面図である。

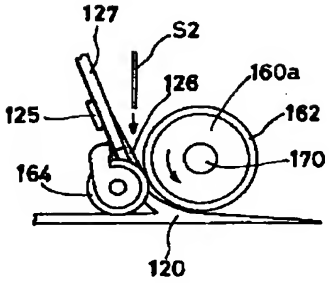
【図１７】上側フレームの内面を表わす底面図である。
【図１８】下側フレームの内面を表わす平面図である。
【図１９】合流搬送駆動部における動作説明図である。
【図２０】モータユニットの一実施形態の斜視図である。
【図２１】モータユニットの一実施形態の断面図である。
【図２２】モータユニットの他の実施形態の断面図である。
【図２３】モータユニットの他の実施形態の斜視図である。
【図２４】搬送通路部の一実施形態の側面図である。
【図２５】搬送通路部の他の実施形態の側面図である。
【図２６】搬送通路部の他の実施形態を示す平面図である。
【図２７】搬送通路部の他の実施形態における内部を示す正面図である。
【図２８】同上の第２基体ケースの内部を示す正面図である。
【図２９】搬送通路部の他の実施形態を示す側面説明図である。
【図３０】紙幣中継装置を組み合せた実施形態の平面説明図である。
【図３１】紙幣中継装置を組み合せた実施形態の正面説明図である。
【図３２】紙幣中継装置を組み合せた実施形態の側面説明図である。
【図３３】他の実施形態による紙幣搬送装置の内部を示す開放状態の平面図である。
【符号の説明】
５　施錠装置
１０　紙幣搬送装置
４１　送り機構
４２　ケース兼スペーサ
１００　合流搬送駆動部
１２０　受入れガイド部材
１２０ｌ，１３０ｌ　上側受入れガイド部材
１２０ｕ，１３０ｕ　下側受入れガイド部材
１２１　第１通路形成板部
１２２　第２通路形成板部
１２４　空隙
１３０　受入れガイド部材
１３２　通路形成板部
１３３　空隙
１４０　モータユニット
１４１　配線ボックス
１４２　モータ
１４５　モータ取付板
１４５ａ、１４５ｂ　鍔部
１４６ａ、１４６ｂ　支持部
１４７　突起
１４８　固定ボタン
１５０　プーリ
１５１　無端丸ベルト
１５２　ローラベース
１５３　圧接ローラ
１６１　無端丸ベルト
１６４　送りローラ
１７０　駆動軸
１７１　従動軸
１７２　従動軸
１７３　駆動軸
１８０　ギヤカバー
１９０　駆動ローラ
２００　搬送通路部
２１０　基体ケース
２１０ａ　第１基体ケース
２１０ｂ　第２基体ケース
２２０　開閉ケース
２３０　プーリレール
２３１　プーリ
２３３　台座レール
２３４　連繋ギヤ
２３５　連動ギヤ
２６０　ローラレール
２６１　圧接ローラ
２６５　圧接ローラ
２６６　平ベルト
２７０　紙幣搬送ガイド
４００　紙幣中継装置
４１０　回転プーリ
４１１　ベース体
４１２　回転軸
４１３　駆動プーリ
４１４　駆動プーリ
４１５　駆動ベルト
４１６　テンションローラ
４２０　圧接ローラ
４３０　連結部
４４０　接続部
４５０　連結部
Ａ　搬送通路
Ｂ　搬送通路
ＢＬ　下側ブロック
ＢＵ　上側ブロック
Ｃ　紙幣通路
Ｆ　フレーム
Ｆｌ　下側フレーム
Ｆｕ　上側フレーム
Ｐ　遊技台

Ｑ　玉貸機
Ｒ　紙幣検出用センサ
ｒ０，ｒ１，ｒ２，…センサ取付孔
＊Ｓ　紙幣
Ｓ１　紙幣
＊　Ｓ２　紙幣

【図１】



【図１９】



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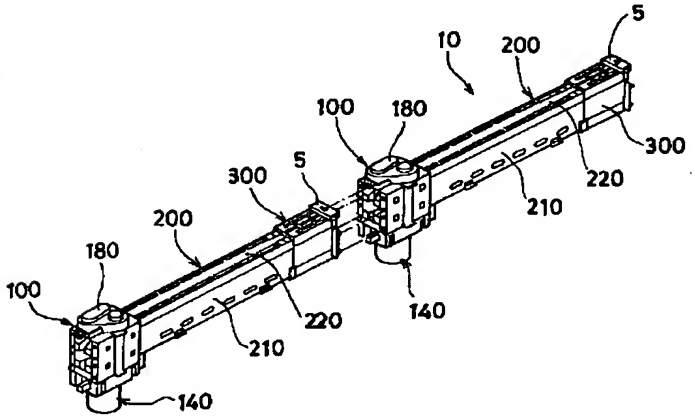
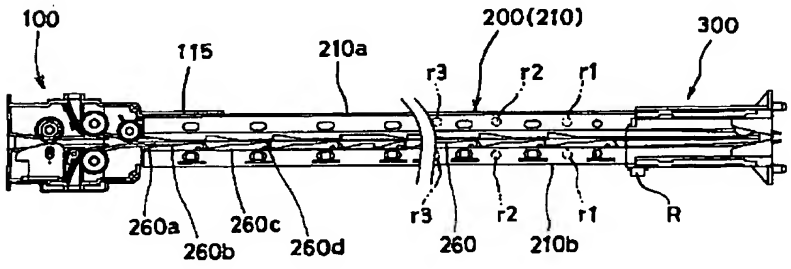
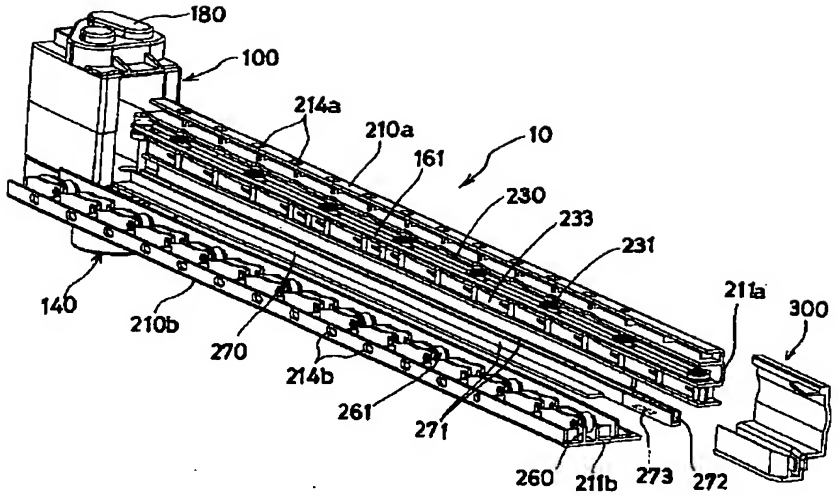


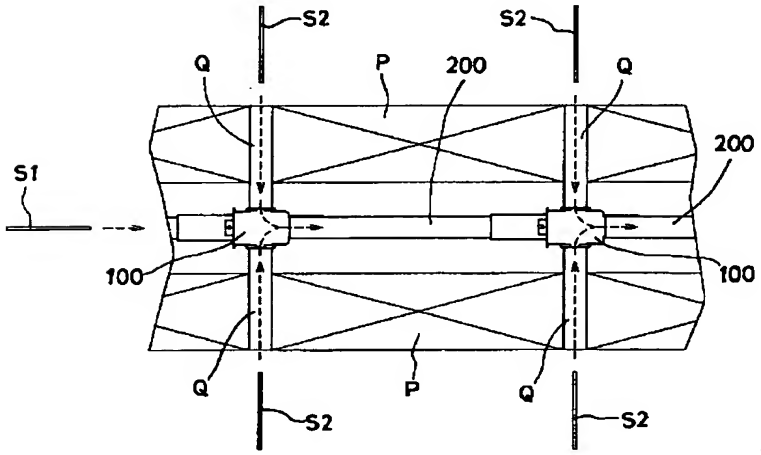
【図６】



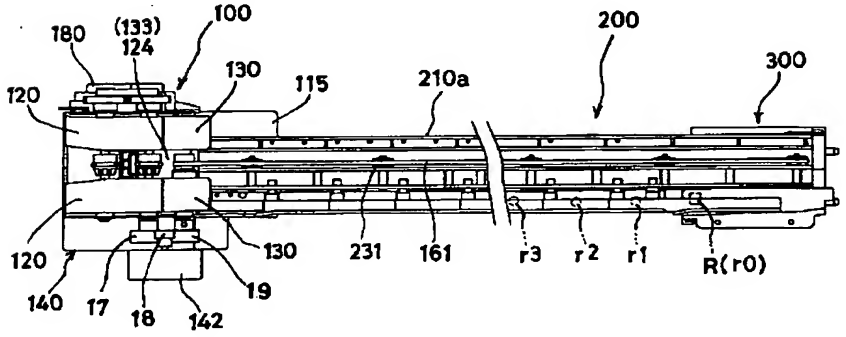
【図３】


180
100
214a
210a
161
10
230
233
231
211a
300
140
210b
270
214b
261
271
260
211b
273
272

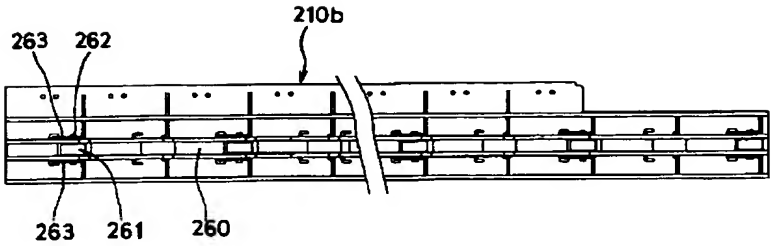
【図４】


S2
S2
Q
P
200
Q
200
S1
100
100
Q
P
Q
S2
S2

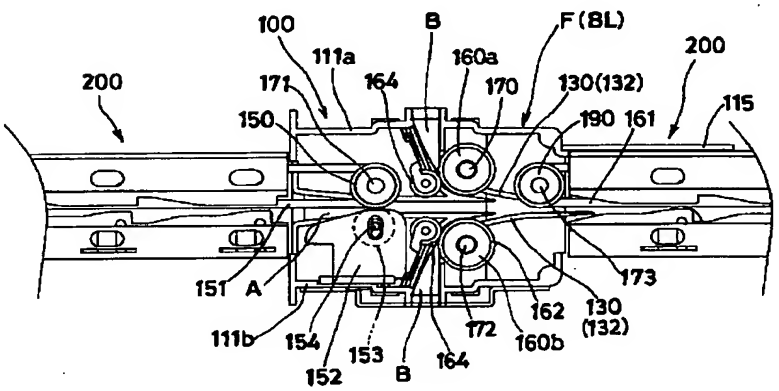
【図５】


180
(133)
124
100
130
115
210a
200
300
120
120
130
231
161
r3
r2
r1
R(r0)
140
17
18
142
19

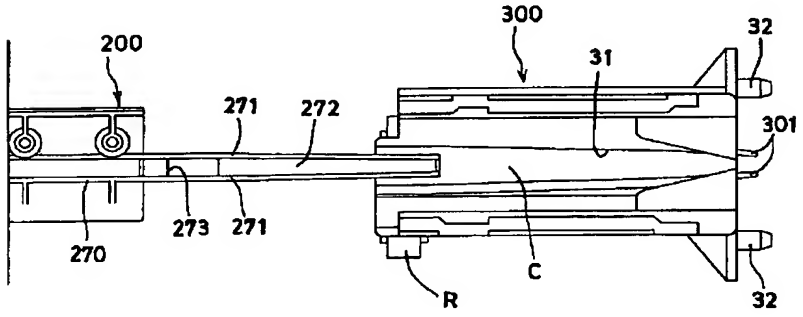
【図７】


210b
263
262
263
261
260

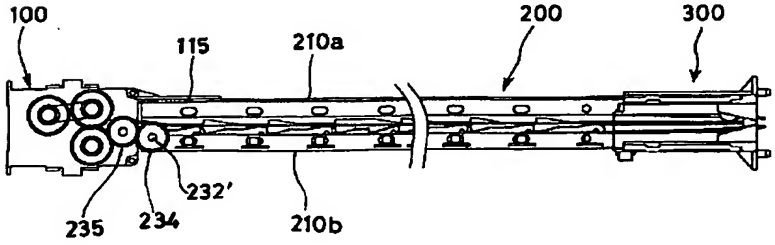
【図８】


100
111a
B
160a
F(BL)
200
200
171
164
170
130(132)
115
150
190
161
151
A
173
111b
154
153
152
B
164
172
162
160b
130
(132)

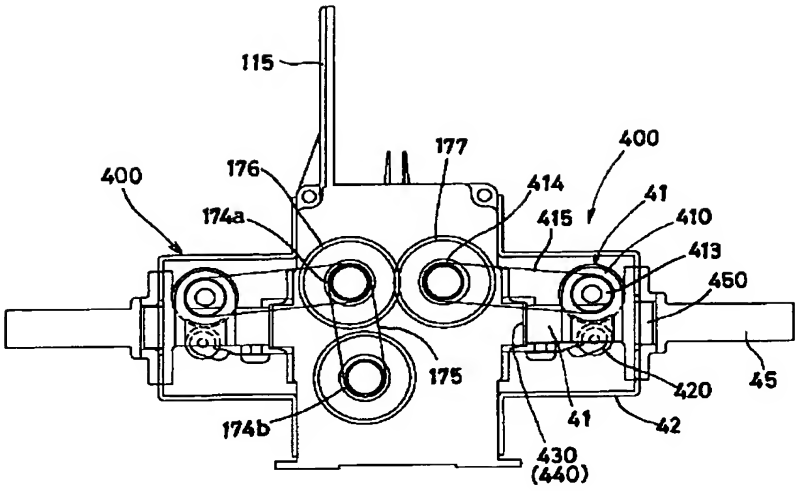
【図９】


300
32
200
31
271
272
301
270
273
271
C
R
32

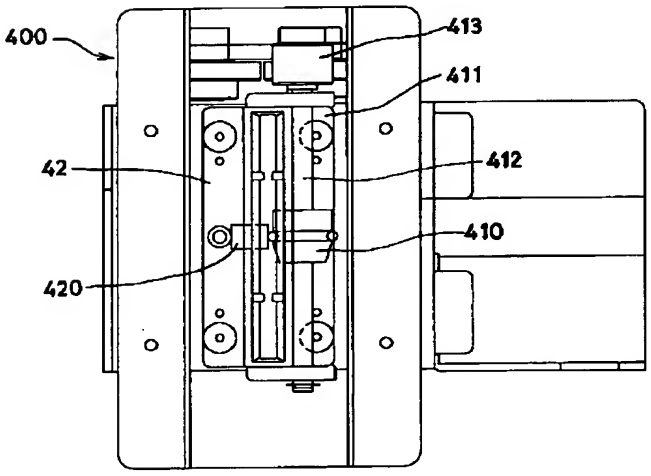
【図２６】


100
115
210a
200
300
232'
235
234
210b

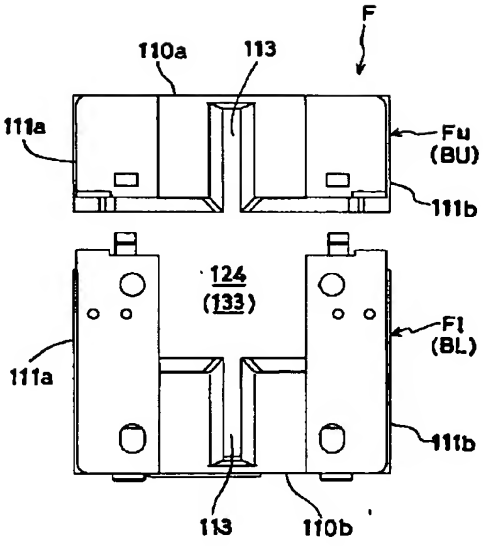
【図１０】


115
177
400
400
176
414
41
174a
415
410
413
450
175
420
45
41
42
174b
430
(440)

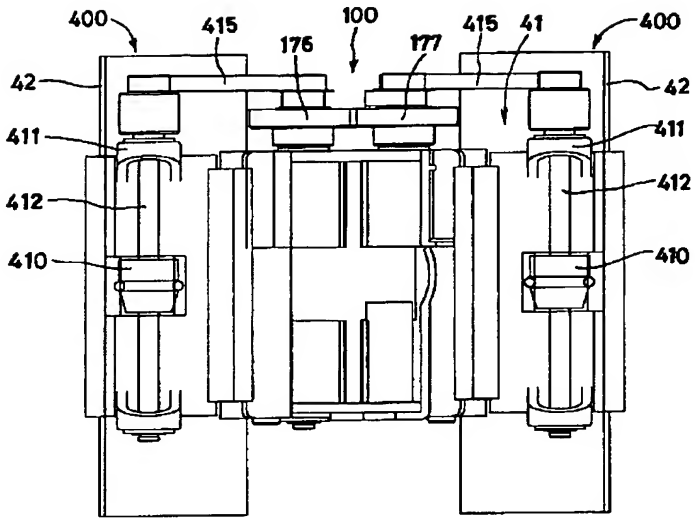
【図１１】


400
413
411
42
412
410
420

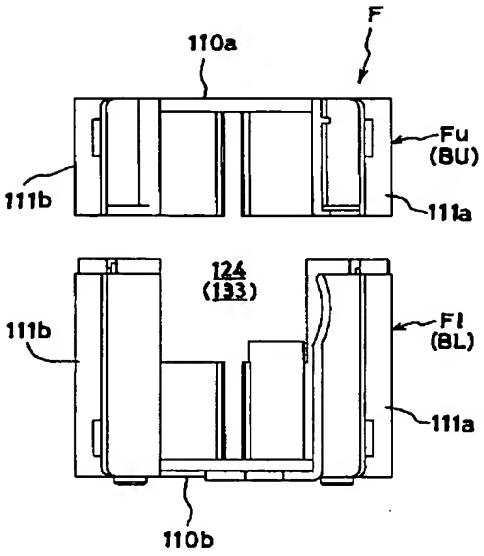
【図１４】


F
110a
113
111a
Fu
(BU)
111b
124
(133)
Fl
(BL)
111a
111b
113
110b

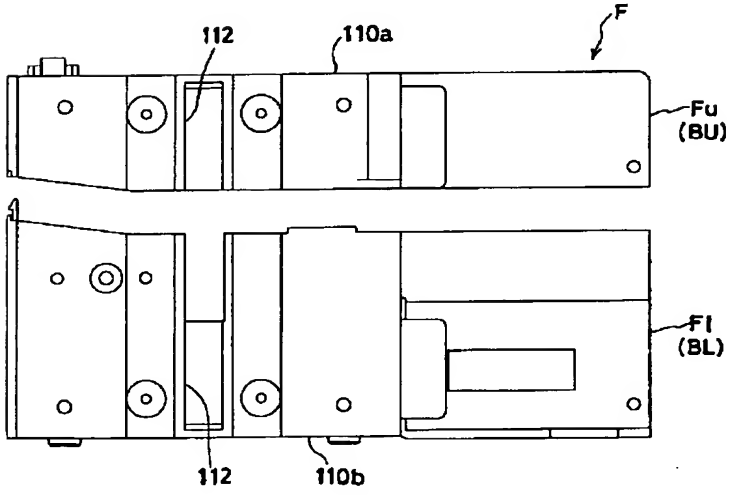
【図１２】


400
415
100
176
177
415
41
400
42
42
411
411
412
412
410
410

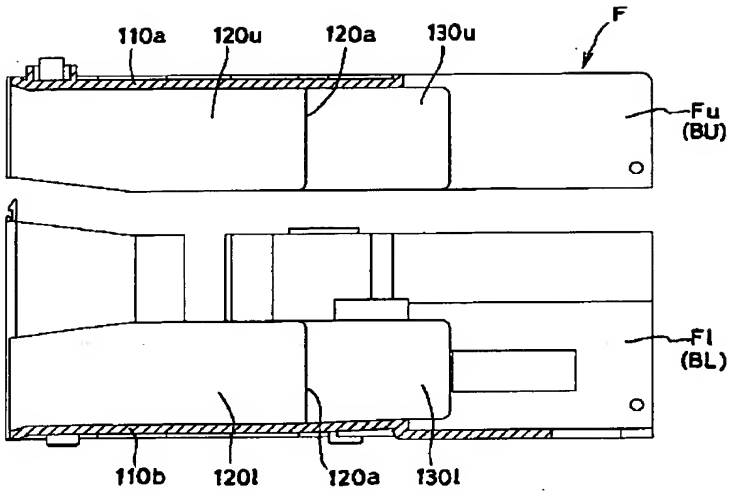
【図１５】


F
110a
Fu
(BU)
111b
111a
124
(133)
111b
Fl
(BL)
111a
110b

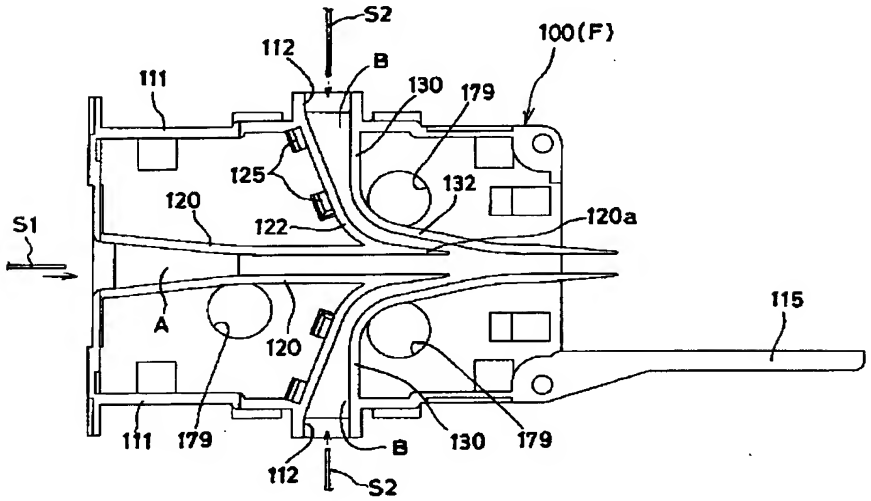
【図１３】


F
112
110a
Fu
(BU)
Fl
(BL)
112
110b

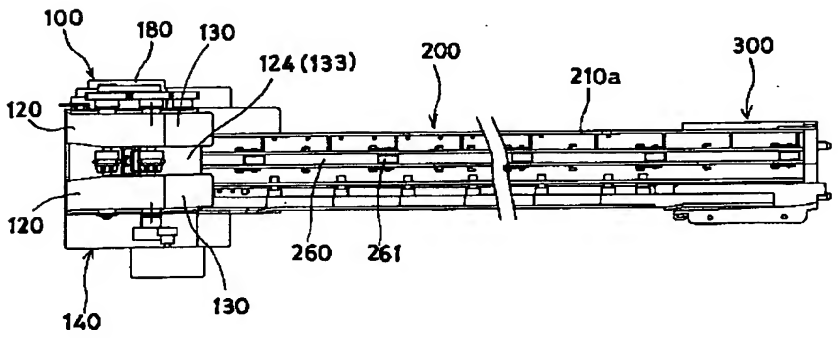
【図１６】


110a
120u
120a
130u
F
Fu
(BU)
Fl
(BL)
110b
120l
120a
130l

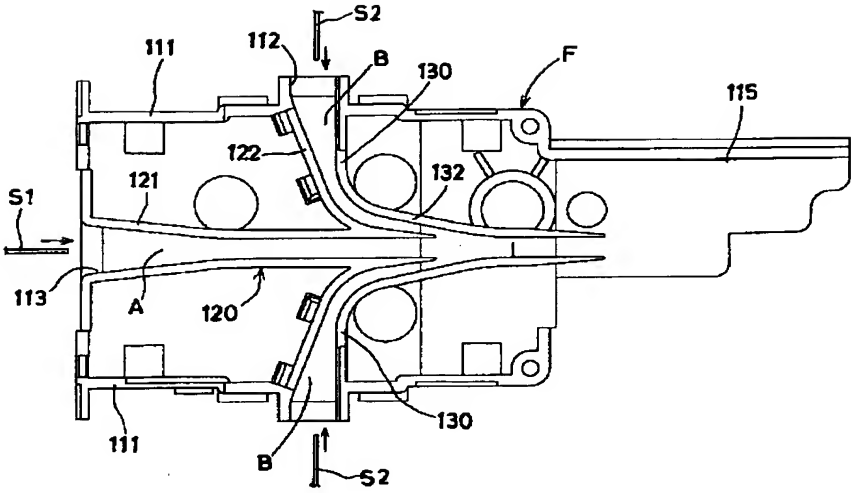
【図１７】


S2
112
B
111
130
179
100(F)
125
132
120
122
120a
S1
A
120
115
111
179
B
130
179
112
S2

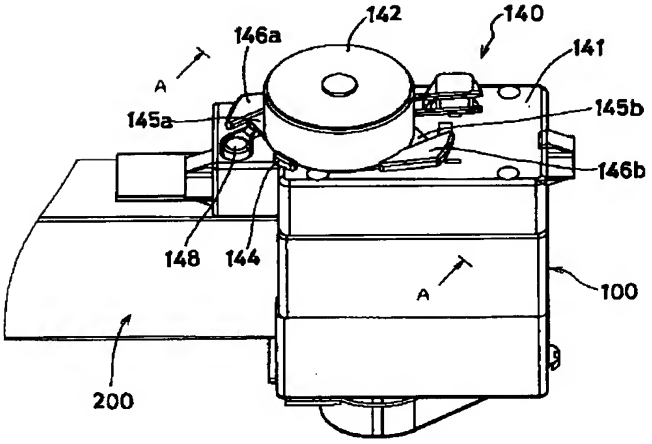
【図２７】


100
180
130
124(133)
200
210a
300
120
120
260
261
140
130

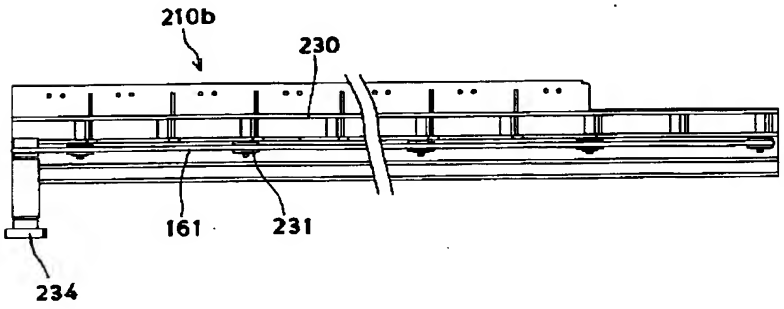
【図１８】


S2
111
112
B
130
F
115
122
121
132
S1
113
A
120
130
111
B
S2

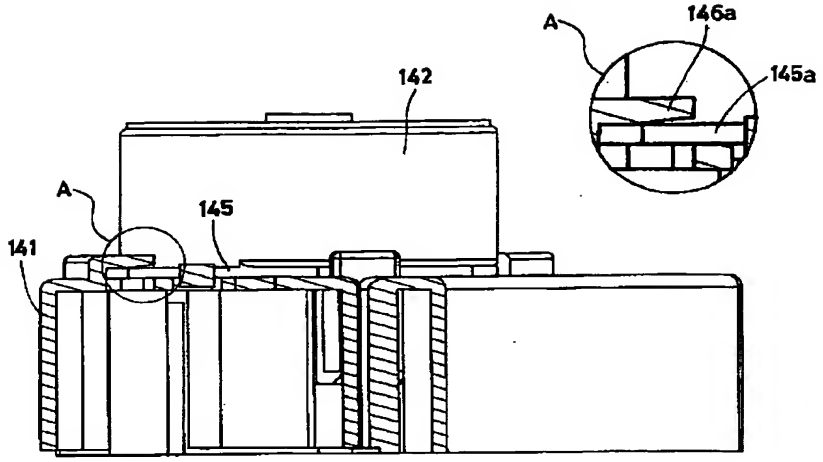
【図２０】


142
140
146a
141
A
145a
145b
146b
148
144
A
100
200

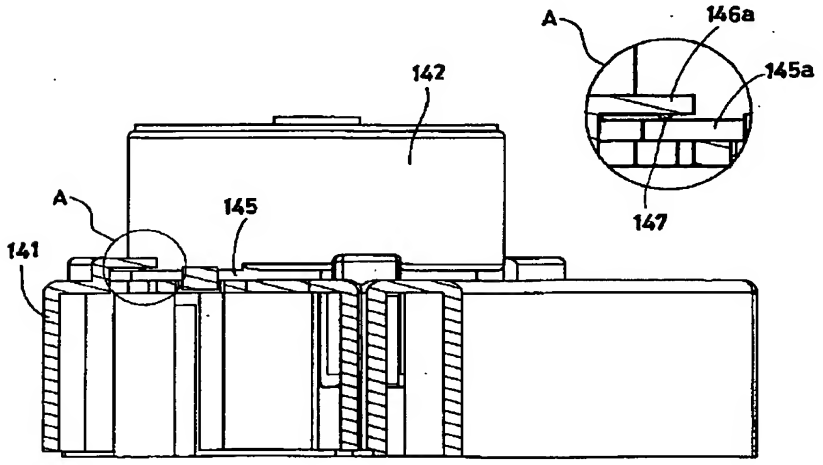
【図２８】


210b
230
161
231
234

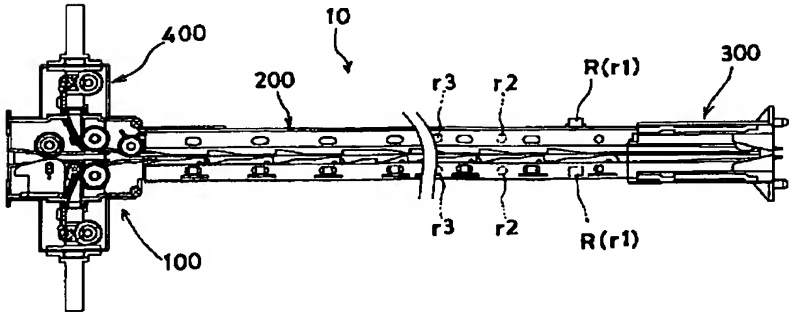
【図２１】


A
146a
145a
142
A
145
141

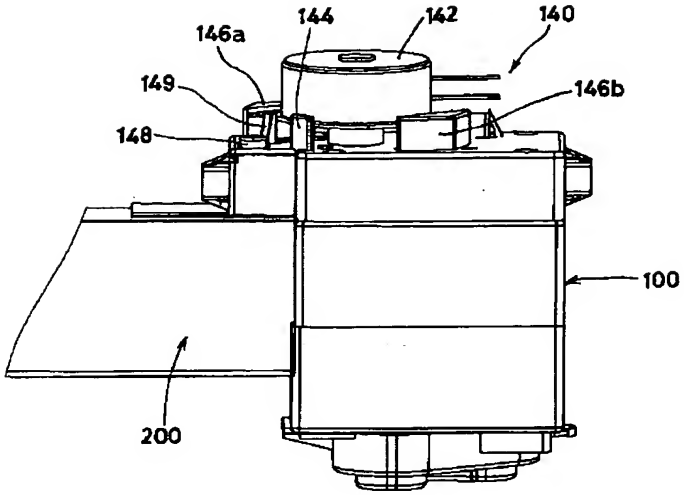
【図２２】


A
146a
145a
142
147
A
145
141

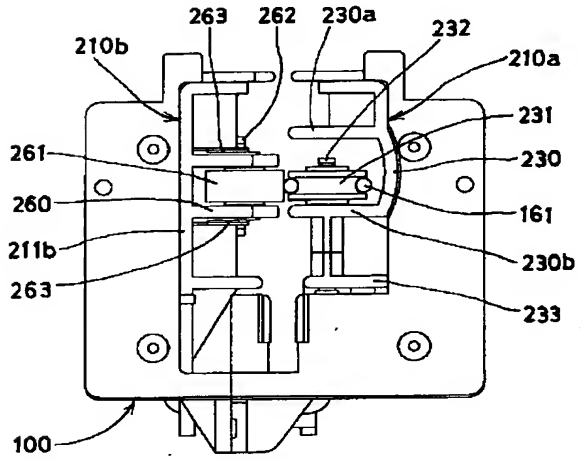
【図３３】


400
10
200
r3
r2
R(r1)
300
r3
r2
R(r1)
100

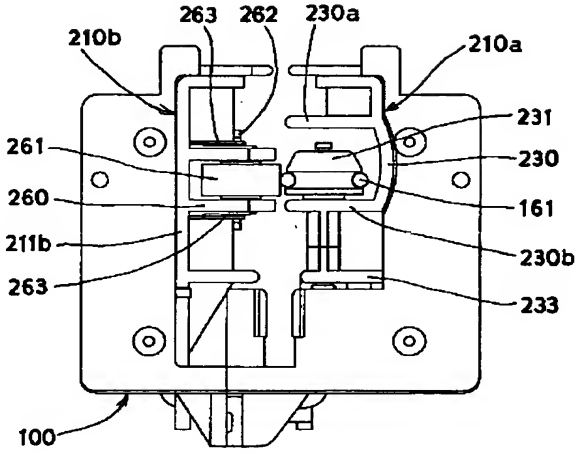
【図２３】


146a
144
142
140
149
146b
148
100
200

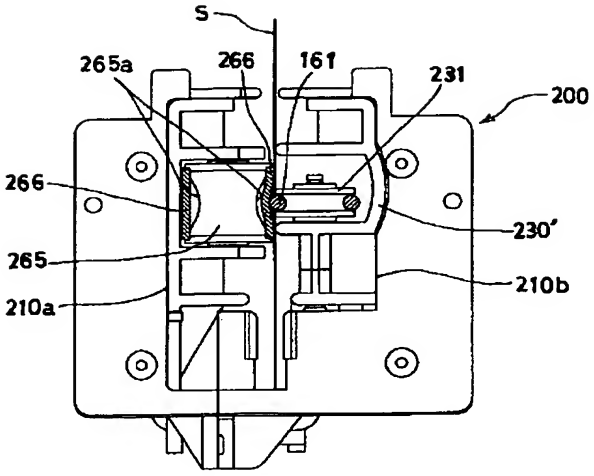
【図２４】


263
262
230a
232
210b
210a
231
261
230
260
161
211b
230b
263
233
100

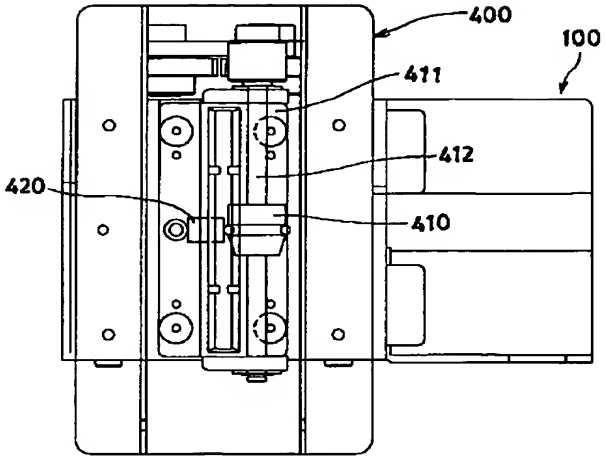
【図２５】


263
262
230a
210b
210a
231
261
230
260
161
211b
230b
263
233
100

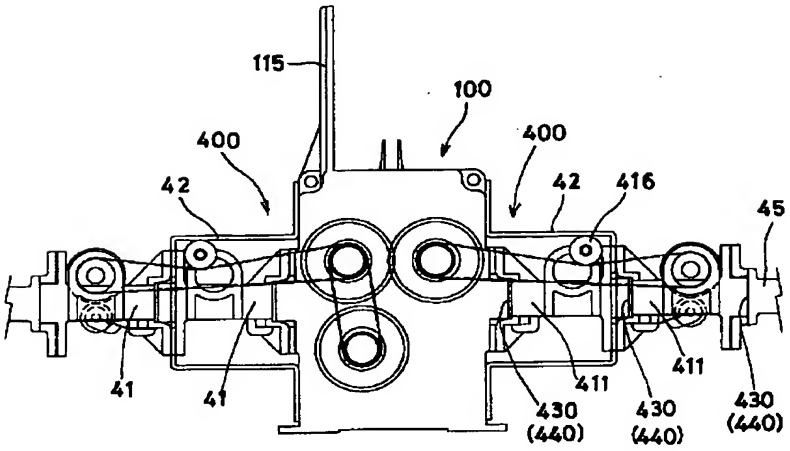
【図２９】


S
265a
266
161
231
200
266
230'
265
210b
210a

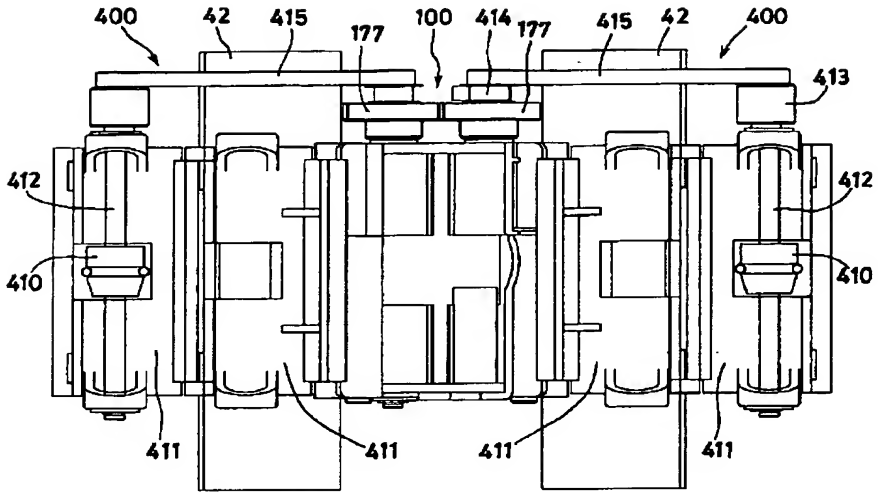
【図３１】


400
100
411
412
420
410

【図３０】


115
100
400
400
42
42
416
45
41
41
411
411
430
(440)
430
(440)
430
(440)

【図３２】



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Ｆターム(参考)　3E040 AA01 BA20 CA05 FG03 FG13